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Original Communications

SIMPLE GLAUCOMA.*

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I have often wondered why that form of eye trouble with occasional and intermitting hypertension with all the disastrous results of the latter to vision, with no subjective symptoms except gradual loss of sight, is called *simple* glaucoma. It certainly is anything but a "simple" affection. Probably there is no more serious or dangerous disease that could afflict an eye, or one where the ultimate outcome, in most cases, is so surely complete blindness. It is so insidious in its approach, so free from marked objective or subjective symptoms that would herald its advent, that the most expert practicing physicians, and many ophthalmologists, would not recognize it before it is too late to be of service.

Hence, we see simple glaucoma only when it is more or less advanced, when failing vision calls its victim's attention to the fact that there is something the matter with his eyes, often when one eye is practically blind. The attacks of eye discomfort, intermitting periods of cloudy or misty vision, colored rings about lights, congestion about the eyeball, which are present in the prodromal stage of congestive glaucoma, are absent, the eyeball looks normal, vision is only slightly impaired, if at all, and there is nothing to awaken anxiety in the patient to make him consult an ophthalmologist. The pupil is not dilated nor the anterior chamber shallow, except in a small number of cases, and then only very slightly, the refractive media are clear, the central vision may be practically normal, even when the field is badly contracted, and the nerve decidedly cupped.

The repeated and frequent use of the tonometer will show that at times we find hypertension, and again normal tension. From some unknown cause, the eye changes so often in its intraocular pressure that it is somewhat bewildering, but slowly and surely the field will contract and the cup deepen.

In most cases, none of the special scotomata indicative of the trouble will be found in mapping the field, but if we see the case in time, even in its earliest development, the diagnosis can be usually made clear by an expert ophthalmologist, although sometimes it is not easy.

Many of these cases are seen only after one eye has been damaged to some extent, but if we do see them in the very earliest stage, we are confronted occasionally with some difficulty in diagnosis. The ophthalmoscope does not settle the question. We often meet a moderate cupping of the nerve, with little or no contraction of the field, and with no variation from normal in the tonometric readings, and we sometimes see what looks like a deep physiological excavation, quite different from the cupping of glaucoma, and still find other evidence of glaucoma in a typical contraction of the field, and with intermittent periods of tension. Hence, we are puzzled to decide between a commencing glaucoma, or an atrophic process in the nerve. If we can make out a Bjerrum scotoma, or Seidel enlargement of the blindspot, we have something to help in the diagnosis, but how often can we do this?

I must confess I am not very expert in doing this because of the unsatisfactory answers of the patients when taking the fields, or from faulty technique. But, when all is said, and the diagnosis is beyond cavil, what advice should we give the patient? We know the eventual bad outcome in nearly all cases, whether operated or not, whether operated on early or late. Medicinal treatment locally with myotics and dionin, and, internally, strychnia and nitro-glycerine, will help to put off the evil day. The operations most commonly resorted to are iridectomy, iridotasis; Lagrange or trephining may do the same thing, but when it comes to operating on a

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good seeing eye, we come to an impasse. The sooner it is done, it is claimed that there is greater chance of success; but when the patient asks, "Will it stop the disease?" "If it does not stop the disease, will it defer the evil day?" "Is there any risk to sight in the operation?" What can you say? Can you truthfully tell him there is no risk, when in fact, there is a good deal of risk. If we are considering operation, is Jackson's test as valuable in this form of glaucoma as in the congestive types? I have used it without any increase in tension or pulsation of the vessels. If there is any rule about operation, I might say that it is advisable when myotics do not keep down the tension. If we operate, what operation should be done? Iridectomy is more generally done, is successful rarely, is a detriment sometimes, and occasionally disastrous in its consequences. Trephining with or without iridectomy gives no better record. Lagrange operation is probably more dependable for arrest of the disease. Iridotasis has had very favorable reports, but like other newer operations, as, for instance, Jervey's, we cannot tie to it until several years have passed because cases operated on by any method or without any treatment except myotics go along for years before becoming blind, but going surely to that goal—only some go faster than others.

Why is it that operations performed exactly alike, ideally done, in as far as an operation can be ideal, have such different results—in a few cases all that we could expect, but in the majority seemingly of no service in arresting the pathological process? Is it not due to the difference in the eyes operated on rather than to the difference in the method of operating? May not some eyes require very little wound filtration to reduce the tension, and others abundant drainage, and how can we differentiate in advance? Is it not because the syndrome of glaucoma simplex is protean in its various manifestations, that whilst in most cases the hypertension is more or less the predominant symptom, there are other causes at work that bring about disaster to sight, even when we are successful in reducing this one symptom to a minimum? In fact, I have seen cases of an apparently glaucomatous cup with failing vision when I never found the tension above what we call normal. Does this mean that normal tension for some is not normal in others? Or that under certain conditions some eyes can give all the symptoms of glaucoma simplex because of some defect in its structure and especially some weakness about the lamina cribrosa without any manifestations of so-called hypertension? What do we know about glaucoma simplex anyhow? I have been trying for thirty or forty years to acquire some knowledege of the subject. I have read enough articles about it to fill this room, but they never put into my head a single clearly defined idea of the exact cause of glaucoma simplex, and I am still groping, still reading.

Dr. Verhoef's latest production, "The Pathogenesis of Glaucoma," is a masterly addition to the subject, and whilst knocking the props from under most of the proposed explanations, leaves us nothing definite to depend on in this form of glaucoma.

But his reasoning appeals to me. Briefly, it amounts to this: The aqueous is excreted mostly by the ciliary processes, and whilst most of it passes into the posterior chamber and thence to the anterior chamber and, out of the eye by the anterior exit channels, part filters through the vitreous, as it has been demonstrated that a free exchange of fluid between the vitreous and the posterior chamber takes place in the normal eye. Now, certain senile changes which we do not clearly understand take place, which cause an excess of mucin (according to Verhoef) to be secreted into the vitreous, decreasing its permeability, and the permeability of the anterior hyaloid: the secretion from the ciliary body is obstructed in its passage through the vitreous, increase in its volume takes place, enough to push the lens forward, slightly narrowing the anterior chamber, the iris is thrown against the ligamentum pectinatum, anterior peripheral adhesions take place, and the filtration anteriorly is obstructed, resulting in plus tension. This could occur independent of the size of the lens, for we see glaucoma simplex in eyes with small as well as large lenses.

Granting this is a correct view of the beginning of the pathological process, why will not energetic use of myotics in the very earliest stage prevent the formation of these anterior peripheral adhesions, by keeping the iris root away from the ligament, and thus

allow it to perform its function of excretion?

There are still, however, many things about an eye itself that we cannot explain satisfactorily; there are many other things in the relation of the eye to the general economy, and especially to the vascular and nervous system, that are practically unknown, and these latter may have a very important bearing on the production of this peculiar affection. These unknown factors in each case (possibly a law unto itself) may have a powerful influence on the results of the most masterly done operation, and make or mar it.

I read occasionally reports of wonderful results from operative procedures in this trouble, but my experience has not given me any confidence in my ability to equal them, any more in the future than in the past. I am of the opinion many of these cases were early stages of congestive glaucoma. Years ago, I was enthusiastic about operations in glaucoma, and I have done many, but as I saw more of these cases and watched them longer, I lost my enthusiasm, and have become rather pessimistic. If operation is ever to do any real and lasting good, it should be done as a preventive means, when the eye is still sound in practically every way, but who will take the risks of operation, even as small as these may be, on a sound eye? I have seen an attack of glaucoma follow an iridectomy when there were no symptoms to call attention to its previous existence. Possibly, some of you may have had the same experience. But after the field begins to contract, however slightly, and the lamina cribrosa to yield to the intraocular pressure, operation does not offer much more, if any more, than local and internal treatment. I believe if I were a victim of this disease, I would decline operation and trust to local treatment.

To exemplify the above remarks of Simple Glaucoma, I selected eight cases from among the many of what I had kept records, exhibited the field charts, gave the treatment and the final results in each case. Comparing the results I found them so contradictory that one is rather confused in arriving at any satisfactory conclusion as to what to do in any given case. One operated on by me fifteen years ago still retains normal vision. Another, who declined operation nine years ago, has kept good sight under myotics. One who was already blind in one eye, and on which I did an iridotasis with satisfactory cosmetic effect, kept good vision for four years under myotics, but on a European trip two years ago was persuaded to have a trephining done and in less than a year was blind. Had he stuck to the local treatment I believe he would be seeing today.

Another came to me in 1916, nearly blind in one eye and good sight in the other. Under myotics the sight continued good for four years. Late in 1920, this case went to New York and a Lagrange was done. The sight was good until February, 1925, when the field began to contract again and the vision to deteriorate.

Another very recent case in a woman under forty years of age, one eye V-20/200 and the other 20/15, was advised to use myotics a while, but she, too, went to New York, had an iridectomy done on the bad eye and a combined iridectomy and trephining on the good eye. In less than a year the bad eye retained the same sight, the good one was reduced to 20/30 with a contracting field and a bad outlook.

One of the cases has been under observation four years. When I first saw him the diagnosis was clear and I advised operation on the eye first affected. I did an iridectomy and the vision remained normal for two years and then gradually reduced to 20/50, and reading No. 2 type what it is today. The other eye remained normal under myotics, although both fields are somewhat contracted.

I am unwilling to advise operating on the second eye. At times, both eyes show a slight increase in tension but rarely above 30.

I could have shown many more paralleling these in results, but the greater the number the more uncertain the conclusion to be drawn as to which to advise, operation or myotic treatment. Whichever we may advise, if the ultimate outcome is bad, we wish we had done the other. In fact, the majority of these cases eventually go blind and the last word has yet to be said about the treatment of simple glaucoma, but I believe, from my experience, that the odds are in favor of the treatment by myotics in delaying the evil day.

Sometimes myotics will not reduce the tension sufficiently or contract the pupil as they should, and such cases require some operative procedure. Others change and show symptoms of congestion, etc., and these also require operation.

200 *East Franklin Street.*

PATHOGENESIS AND CHOICE OF OPERATION IN DIFFERENT TYPES OF GLAUCOMA.*

By WILLIAM ZENTMAYER, M. D., Philadelphia, Pa.

Few surgeons in this country operate upon a sufficient number of glaucoma cases to decide from their own experience alone what should be the operation of choice in the various types of this disease. Furthermore, in the type in which controversy is active, and often acrimonious, the course of the disease is chronic and the cases pass from under our observation, so the end results of any operative procedure are frequently unknown to the surgeon. In coming to a decision we are therefore compelled to study the concensus of opinion and the statistics of those whose judgment we re-

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spect, and to scrutinize with the utmost care the claims naturally aroused by paternity of certain operations. Moreover, we will be influenced by the views we adopt as to the pathogenesis of the disease.

Medicine seems not to have escaped the tendency of the times to attack the old order and overthrow what appeared to rest on a firm basis. This is illustrated in the recent views which have been advanced concerning the secretion and filtration of the fluids of the eye, and the attitude toward the older theories regarding the pathogenesis of glaucoma. For instance, Magitot believes that the aqueous humor is of the same nature as the cerebrospinal fluid and therefore quite different from the lymph of the eye, with which it never mixes nor comes into direct contact. The eye possesses independent lymph channels for the anterior and posterior segments. The aqueous is secreted at the beginning of life by special neuroglial cells and is replaced by a process of dialysis from other glial cells. He denies its origin from the ciliary body. The purpose of the choroid is the maintenance of the normal tonus of the eye. He does not believe in the perpetual secretion of the aqueous or its escape at the angle of filtration.

For this reason, I would like to present that which to me seems rational in the light of what is known regarding the pathology and pathogenesis of the disease, and which has influenced me in my choice of operations.

It has always seemed to me that in considering the pathogenesis of primary glaucoma not enough stress has been placed upon what we know of the underlying causes of certain secondary glaucomas. In almost all secondary glaucomas we have positive evidence that the increase in intraocular tension is caused by closure of the filtration angle. One need but instance glaucoma following perforating wound of the cornea, ulceration of the cornea with prolapse of the iris, dislocation of the lens, wounds of the lens, intumescent cataract. Secondary glaucoma arising in the course of cyclitis or intraocular tumors is caused indirectly by the same mechanism. All this is presumptive evidence that the cause which operates to produce hypertension in such eyes acts to produce it in primary glaucoma.

The outstanding etiologic factor in primary glaucoma is age. Advanced age is associated with sclerotic processes not only in the vessels but in the fibrous coats and their extensions, the sclera, cornea and pectinate ligament—with these changes we find a volumetric increase in the lens. The second important etiologic factor is hyperopia with its hypertrophied ciliary body and an eye whose dimensions are relatively small as to the size of the adult lens.

It is not necessary here to explain how these conditions operate to interfere with the egress of fluids from the anterior filtration channels of the eye. That they do so there can be no doubt, and I believe it to be the way in which glaucoma may be induced.

I would not have it inferred that I believe the etiology of glaucoma to be as simple as this. That there are many underlying disturbances which play an important role in the disease is certain, but the cause of the hypertension is most surely, in most cases of primary glaucoma, to be found in the retention of the fluids of the eye.

The important exciting causes are mental and physical exhaustion from various causes operating upon the vasomotor control of the eye and the rest of the body.

Operations.

In the choice of an operation in a given case of glaucoma, two important points are to be considered, the type of glaucoma and the stage of the disease. If we hold to the old view that the cause of ocular hypertension is a blocking of the normal anterior channels of filtration, then we will select that operation which best opens up these channels.

Acute Glaucoma.

That a basal iridectomy can do this in acute congestive glaucoma we have ample anatomic proof. That it is permanent and effective time has shown. The success of the operation is probably due to the fact that because of the pain and the greatly impaired vision we see and operate upon these cases before adhesions have formed in the vicinity of the filtration angle. That the result is usually permanent may be due to the fact that there is some acute disturbance of metabolism or vasomotor control which precipitates the attack, and that subsequent systemic disturbances of this nature, which doubtless occur, fail to produce hypertension because of the permanent opening up of filtration by the iridectomy.

No other operation is to be thought of in the treatment of this type of idiopathic glaucoma. As to the time at which the operation should be done there may be a difference of opinion. We know that the first attack of glaucoma even in non-operated cases often passes off without leaving permanent impairment of visual function. As an immediate iridectomy is often difficult to perform and is accompanied by some hazard because of the exceedingly high tension, I often delay operation until an attempt has been made to reduce the tension by the frequent use of eserine, morphia, hot stupes and purges. If the pain subsides and the tension diminishes the operation can be postponed until conditions are more favorable. If the case is of the fulminating type immediate operation must be risked, as permanent blindness may result if the exceeding high tension is not at once relieved.

Subacute Glaucoma.

Many of the cases of subacute congestive glaucoma that we see have existed for some time before they come for treatment and this, together with the fact that they often present evidences of an actual low grade inflammation, makes it difficult to free the iris at its base by an iridectomy. They are therefore, in my opinion, best treated by the formation of a filtering scar or a cyclodialysis.

Chronic Simple Glaucoma.

We come now to a consideration of the type in the treatment of which there exists great difference of opinion, not only as to whether miotics or operation should be employed, but as to the proper operative procedure when this is the mode of treatment decided upon. I should like to digress to state my views regarding the indication and value of the miotic treatment. Expressed in general terms, miotics may be tried in all cases where the tension does not range above thirty and in all cases in patients over sixty years of age, in private practice. In dispensary practice, except in patients with moderate tension or over sixty-five years of age, some form of operation is the only safe procedure. Another class of patients requiring operation are those who cannot be seen at regular intervals for checking up the progress of the disease. Miotics may be continued so long as tension is kept at the upper limit of normal (to borrow an expression of Dr. Weeks), the pupil is controlled, the peripheral field holds, and no scotoma appears in the central area. Some cases of chronic simple glaucoma in young people seem self-limited.

All the operations commonly in use which more or less permanently reduce the tension in chronic simple glaucoma are concerned with the iris, and this probably results in freeing some portion of the filtration angle. According to Holth, who is a strong supporter of the operation introduced by Herbert and named by Borthen iridotasis, the mechanism of the procedure is a stretching of the iris with a consequent thinning of its base in that portion of the membrane opposite the incarceration. Some believe its effect to be due to filtration at the site of the scar while others attribute it to atrophy of the ciliary processes over that portion of the ciliary body concerned in the operation. Cyclodialysis can scarcely be considered as exerting a permanent effect on hypertension, but it may be repeated.

The operation of peripheral iridotomy, devised by Curran, has gained some advocates. It is based on his view that glaucoma is caused by a too close contact of the sphincter of the iris with the anterior capsule of the lens, preventing the aqueous in the posterior chamber from finding its way into the anterior chamber. Granted that this is the cause—the condition can be relieved as well by an iridectomy with less danger and the further advantage that the result is more likely to be permanent and more effectual.

In the great majority of cases of chronic simple glaucoma it is possible up until an advanced stage of the disease to open up the natural channels of filtration, and the operation of choice should be the one which accomplishes this most effectually and permanently; and properly performed iridectomy meets these requirements. As is well known, and emphasized by Collins, a wound of the iris made under aseptic precautions and kept bathed with aqueous humor, never forms granulating tissue, the cut surface remaining always open; this applies also to the corneal and sclerocorneal tissue. Because of this we secure by a complete iridectomy more extensive opening of the other channels of egress for the aqueous humor than we do by a small peripheral basal iridectomy.

An extremely narrow anterior chamber can no more be considered an obstacle to the per-

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forming of iridectomy in chronic simple glaucoma than in the acute type, in which we all do iridectomies. In old cases of chronic simple glaucoma where prolonged contact of the iris with the cornea has resulted in true adhesions, and where the iris is degenerated, it is difficult at all times, and impossible sometimes, to get a basal iridectomy. In such cases the Elliott operation, by securing vicarious drainage, may be performed.

Have we sufficient evidence to substantiate the claim that in cases where the scotomatous areas approach fixation the Elliott operation does not endanger fixation? If we have, this would seem to be a valid claim for its employment, although it is probably true, as Weeks states, that this area will be ultimately lost whatever the operation. At present convincing evidence is wanting. However, since the question is still open, I am in the habit of doing sclero-corneal trephining when this type of scotoma is present.

The objections to the Elliott operation are that iritis too frequently results, that secondary changes, usually in the development of lenticular opacities, sometimes occur either immediately after the operation or much later, —probably the result of hypotonus,—that reduction in tension is not always permanent and, lastly, that late infections relatively frequently occur. These, I think, more than counterbalance the undoubted brilliant results sometimes obtained in widening the field of vision and improving central vision.

Iridotasis is growing in favor. This is probably due to its ease of performance and freedom from danger of injury to the lens. Its effect on tension is satisfactory. Even when the technique is perfect the danger of secondary infection and sympathetic inflammation is considerable. Up to the present I recall but one reported instance of late infection, but very few operations of this type have been performed. Had it been done as often as has trephining it probably would occur frequently enough to constitute a serious objection. It may be of interest to note that in two of my cases where the iris slipped partially back into the anterior chamber, so that the only effect was to make a long vertically oval pupil, the effect on the tension was good.

In congenital glaucoma the cause of the hypertonus is again an obstruction to the egress of the fluids of the eye from the anterior filtration channels. Usually this is due to a partial or complete absence of Schlemm's canal, though other causes are atypical development of the cribriform ligament (Collins), and prenatal inflammation resulting in adhesion between the iris and cornea. Because of this and also because of the great distention of the ocular tissues we have an entirely different problem to meet from that of primary glaucoma. Iridectomy is only safe in the very beginning of the disease, and trephining has not proved satisfactory. Repeated posterior sclerotomy offers the best hope of arresting the disease.

To cover the subject assigned me and yet not make the paper too long, I shall but briefly refer to certain types of secondary glaucoma.

The hypertension which often complicates obstruction to the central vein of the retina is difficult to combat, but the condition does not seem to me to be quite so hopeless as stated by some surgeons. Owing to the vascular degeneration any operative procedure which brings about a sudden lowering of the tension is fraught with danger. Theoretically (and practically, as proven in two cases of my own) cyclodialysis is the logical operation, as the lowering of the tension by this method is quite gradual, forty-eight hours often elapsing before the maximum effect is reached. When this has been attained an iridectomy may be done.

Secondary glaucoma often occurs in serous uveitis, especially during the use of a cycloplegic. It is due to an alteration in the composition of the aqueous and the deposition of fibrin and pigment in the spaces of Fontana and while transient interferes with the use of the much needed cycloplegic. Fortunately it is readily controlled by a paracentesis of the anterior chamber, the small corneal wound being kept open by the daily introduction of the point of a spatula.

In occlusion of the pupil early iridectomy may be successful in lowering the tension, but where iris bombe has developed transfixion of the bulging iris with a narrow cataract knife offers the best hope of success.

In traumatic cataract the swollen cortical should be evacuated.

1506 *Spruce St.*

DISCUSSION OF PAPERS BY DRS. WHITE AND ZENTMAYER.

Dr. Harry Gradle, Chicago: It is with great hesitation that one rises to discuss papers by Dr. White

and Dr. Zentmayer, especially if one permits himself to differ even in some minor points. When men of their capability, experience, and erudition speak upon a subject, there is but little left for one to add.

It would seem as though Dr. White were ultra-pessimistic as to the ultimate outcome of all cases of glaucoma simplex. Undoubtedly, there is a large proportion of cases of a malignant character that lead to eventual blindness regardless of the character of treatment and the best medicinal and surgical treatment merely postpone the days of total blindness somewhat. But on the other hand, there is a fair sprinkling of cases that respond fairly well to miotic treatment for a time and then gradually begin to depreciate slightly in vision, and visual fields to run an intra-ocular tension that is just slightly above what is regarded as the upper limits of normal. Such cases are good surgical risks and most frequently, a technically well executed operation will aid miotics in maintaining vision until the end.

The indication for operation in such cases must be based upon the gradual loss of vision; upon the gradual decrease in the visual fields without acute or prominent scotomatous areas; upon the gradually progressive cupping of the optic discs; upon the curve of intra-ocular tension that remains persistently above 26 to 28 m.m. Hg. and refuses to decrease more than five millimeters of mercury under vigorous massage, and upon failure of the tension to undergo a marked reduction when adrenalin is injected subconjunctivally.

The operation of choice falls into one of three classes and must be decided upon by the aforementioned indications. The first type of operation is one that aims to restore the normal outlet of the intra-ocular fluids and is best illustrated by the classical iridectomy. The second type aims to alter the intra-ocular outlet of the fluids in a way that is not yet clearly understood; the cyclodialysis and the Curran peripheric iridotomy are of this type. The third type aims to establish an extra-ocular outlet for the intra-ocular fluids, usually by subconjunctival fistulization and is best illustrated by the Elliott trephining operation or the iridotasis.

Dr. Charles A. Young, Roanoke: I have used adrenalin both sub-conjunctivally and on pledgets of cotton, in the upper fornix, as recommended by Dr. Gradle, and found that it reduced tension in the majority of instances from 15 to 20 degrees, on McLean Instrument, but could not see that it in any way aided in the treatment of the disease as its action was seemingly very transient. I would like to know what success, if any, Drs. Zentmayer and White have obtained from the use of this drug.

THE SURGICAL TREATMENT FOR HYPERTHYROIDISM.*

By ROBERT LEE PAYNE, M. D., F. A. C. S., Norfolk, Va.
Surgeon, St. Vincent's Hospital.

This is a big broad subject and will be found difficult to cover in a paper which the limited time of this meeting will permit.

It is interesting to look back over one's experience with the treatment of the thyroid gland and to note how readily history, both medical and surgical relating to this gland, repeats itself. In the earlier years of thyroid surgery practically all cases that we saw came late for operation. Late operations contributed largely to a high mortality and this in turn created the vicious circle in surgery in which a high mortality made in turn a late operation.

There is no study more interesting than the problem of the thyroid, but the dictum of Kocher must always be kept in mind, that it is not necessary for the medical man to act surgically, but it is always necessary for him to think surgically and in this connection Guerry has aptly pointed out that it is not necessary for the surgeon to act medically but very essential that he think medically. We may probably ask what benefit the patient may get from the surgical treatment of thyroid disease. In every case of hyperthyroidism, provided the case is handled intelligently by both surgeon and internist, the patient may expect an immediate, prompt, and almost always complete relief from his or her symptoms. In addition, if all focal infections are eradicated, all intoxications are eliminated, and pyschic disturbances are put under control, the late results following treatment directed to the thyroid may universally expect to be good. If not entirely good, there will usually be a very marked improvement. Not only does operation in hyperthyroidism offer considerable less risk for life than that contributed by the disease, but there is also a relief following the operation which is decidedly more prompt than that following the long uncertain rest cure. More important, operative treatment cuts short the progressive deterioration of the vital organs, principally the heart, liver and kidneys, giving immense advantage to the patient, for if the rest cure fails to relieve, the amount of progressive damage to vital organs will probably be increasing during the period of rest cure. Surgery in conjunction with medical advice from a real internist offers a primary mortality of around 2 per cent. 85 per cent of complete and symptomatic cures, about 7 per cent received marked benefit, and only a small number, about 5 per cent, apparently are not helped. Taking into account, therefore, the slight primary mortality and the immediate promising and remote results, we may consider that, in hyperthyroidism, what is

*Read in a symposium on Thyroid Disease before the Norfolk County Medical Society, March 9, 1925.

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necessary for cure is like that in appendicitis entirely dependent upon a proper diagnosis.

There are six pathological conditions of the thyroid gland which are amenable to surgical interference, the most important of these being, of course, the exophthalmic type of goitre. Next in importance is the adenoma with hyperthyroidism. Third, the diffuse colloid goitre, which often obtains a great size, is often serious and sometimes produces grave pressure symptoms. Fourth, we have the adenoma without toxic properties. Fifth, thyroiditis; and, finally, malignancy.

Exophthalmic Goitre.

This is a constitutional disease which is probably due to an excessive abnormal secretion, having a peculiar nervous syndrome—exophthalmos, an increased metabolic rate with the accompanying secondary manifestations and showing pathologically a diffuse hypertrophy and hyperplasia. The condition is often severe, of overwhelming intensity, beginning abruptly and terminating fatally in a few months. This acute condition, however, will often be followed by a remission, which may last for many months, only to be followed again by another exacerbation of even greater severity. At times, however, the onset is extremely gradual and the disease may run a prolonged mild course with very little variation.

We do not know the cause of exophthalmic goitre but the pathology of this condition is definitely known, and is always a constant hyperthrophy-hyperplasia. All the evidence points to an excessive amount of secretion from this gland, and all methods of treatment surgically aim to diminish the output of the gland by a reduction of its nerve and blood supply by either surgical ablation or by some form of treatment such as radiation or the injections of boiling water, which will destroy the substance of the gland. It has always been considered necessary to preserve a sufficient quantity of the normal gland to carry on the normal functions incident to the welfare of the patient. In certain stages, particularly the acute toxic exacerbations of the disease, the removal of the gland is attended with great danger; particularly, danger is encountered immediately preceding, during or following a crisis, and in such instances it is always best to withhold radical surgical procedures, substituting for them, on the other hand, radium, the injections of boiling water, or ligations of one or both lobes. The improvement in the patient after conservative preparatory measures, coupled with proper long rest, serves to make the radical thyroidectomy possible with a far greater degree of safety than would otherwise have been possible. Some of these cases remain apparently well, but the majority without major thyroidectomy suffer relapses sooner or later.

In the earlier surgery of this gland, it was a custom to do only a partial removal of one or both lobes, but today the routine operation for the removal of goitre is even more radical, consisting of a more or less double resection of the thyroid gland, with an effort to preserve only a small portion of the posterior portion of each lobe, equivalent to one-sixth of the normal gland.

Given a case of exophthalmic goitre, if properly handled, we should expect relief in 80 per cent of all cases, and the failure to cure these conditions by surgery may be attributed to one of three causes:

First, incomplete removal of the hyper-secreting gland.

Second, delay of the patient in seeking surgical relief until visceral changes have taken place, and,

Third, the failure to eliminate the various foci of infection after the operation.

Adenoma With Hyperthyroidism.

This is a definite clinical entity and must not be confused with the exophthalmic type of goitre. The condition develops insidiously and without apparent cause, not only developing gradually but progressively. It is particularly in this type that iodine is so dangerous, as well as radiation therapy, for the symptoms may be induced abruptly by the administration of iodine to a patient with a simple adenoma and without hyper-secretion. The clinical picture often resembles that of the syndrome of cardiovascular disease, and on account of the slow and progressive onset the patient does not realize the gravity of his condition. The heart shows great irregularity or symptoms of decompensation take place. Consequently, owing to the delay in coming to operation, these cases often develop advanced

visceral changes which materially add to the risk of operation and interfere materially with the possibility of cure afterwards. It is true that the successful removal of a toxic adenoma is usually followed in about two weeks by the complete disappearance of the hyperthyroid symptoms, but it is hard to cure the changes in the liver, heart and kidneys which may have taken place before the patient came for diagnosis and proper treatment. I consider the toxic adenoma the most treacherous of all types of pathology found in the thyroid, for the exophthalmic type is so much more outspoken, whereas we are often led into iodine or using X-ray and radium for the smooth symmetrical enlargement of the thyroid, thinking it to be the exophthalmic type of hyperplasia, when, in reality, after the hyperplasia is reduced by radium therapy, there will be found a definite adenoma at the bottom of the toxic symptoms which in turn are invariably made worse by any form of treatment other than surgical eradication.

The simple adenomas are a distinctly simple problem, occurring either as single or multiple masses, and usually come late in the second and third decade of life. The symptoms produced are usually the result of the pressure of the growth on the surrounding structures and vary according to size and location of the tumor. Adenoma attain great size and a goodly portion of them project below the sternum and become intrathoracic. In the Innsbruck Clinic at Frieburg, out of 1,473 cases of thyroid disease, 487 or 32 per cent were found to be intrathoracic, that is, a greater proportion of the enlargement was below the level of the clavicle. Symptoms produced are great shortness of breath, with an apparently small tumor, marked displacement of the trachea and signs of pressure on the great veins of the neck that cannot be explained by any visible tumor. The neck veins fill from below when they are emptied by the finger, and the arm veins do not empty when the arm is held high. There may be paralysis of the recurrent nerve or sympathetic paralysis with a regression of the eyeball, contracted pupil or ptosis, all from unusual pressure. Sometimes surgical removal of these cases is more difficult than the recognition of the disease.

Diffuse Colloid Goiter.

This is the commonest enlargement of the gland, is usually physiologic in character and occurs principally in adolescence. According to the work of Marine, it is well-established that iodine insufficiency is the causative factor, and that not only occurrence of this condition but also the enlargement itself can be overcome by proper administration of iodine. The goitre is unassociated with symptoms other than those incident to pressure, but when the enlargement develops in a young girl of unstable nervous mechanism her symptoms are often mistaken for the hyperthyroidism of the exophthalmic type. In many instances the two conditions may be readily separated, but in many cases—especially where the neurotic tendencies are over-marked—it becomes extremely difficult by clinical means to ascertain the difference between the two diseases. It is in such conditions that repeated basal metabolic readings contribute wonderfully to the accuracy of diagnosis. The metabolism rate of the patient with colloid goitre would be normal or slightly subnormal, while that of the patient with the toxic type of enlargement is always above normal. Unless the enlargement of the colloid type is associated with masses suggesting adenoma or the dimensions become so great as to give pressure symptoms, surgery is not indicated. On the other hand, diffuse colloid goitre will usually disappear spontaneously around the twenty-fifth year, but it can be induced to go away by the proper administration of iodine or thyroxin. After the gland has thus been made to retrogress, iodine should actually be given as a preventive measure to prevent a recurrence of the enlargement. Where pressure symptoms are a factor, then surgery should be chosen, and in this condition the operative risk is never over 1 per cent, and is usually around one-half of 1 per cent. This non-surgical aspect of colloid goitre is important when compared with simple adenoma, which may become toxic, and should always be removed by surgical methods though simple at the time of recognition.

Thyroiditis.

Thyroiditis is a rather uncommon condition, but I have been fortunate enough to see two definite cases of thyroiditis upon which

operation was done, the diagnosis being confirmed in the laboratory.

There are two types of inflammation, the non-tubercular and the tubercular. In the simple inflammation there is usually a history preceding of an acute infection of the nose or throat, and most of these types under rest and ice-cap go to an early resolution. They sometime stimulate the parenchyma of the gland sufficiently to produce a hyper-secretion, and this is followed by the toxic symptoms we so commonly see in hyperthyroidism. Sometimes the inflammatory process, whether it be tubercular or non-tubercular, so completely destroys all of the secreting structure of the gland that a myxedema results. I have never seen this complication, but in one of my cases there was such a complete involvement of both lobes of the gland that we thought the growth was malignant because of its stony hardness. At operation apparently the entire structure of both lobes consisted of calcareous deposits which gave the classical feeling of bone in the throat. This we interpreted as being the terminal stage of tubercular thyroiditis.

The other case of thyroiditis, which was operated upon by us, was also hard but had only scattered areas of calcareous deposits in the lobes. While surgery is indicated in the tubercular and suppurative types of thyroiditis, the mild or simple types often resolve without operation. But the most important thing to be remembered in connection with all early inflammations of the thyroid gland is the relationship of the tonsils, teeth and sinuses, for in these locations principally are found the focus that is causing the condition.

Malignancy of the Thyroid.

Malignancy of the thyroid gland is not common, and I find seven cases in my series of thyroid operations. Sarcoma and carcinoma are the commonest types of malignancy found, but malignant adenoma and malignant papilloma have been frequently reported. When the malignancy in the gland invades the capsule, the diagnosis can readily be made, but otherwise the diagnosis of malignancy of the thyroid cannot be made until the tissue is examined in the laboratory. Wide surgical removal followed by extensive radium or X-ray treatment is the only hope to offer these patients, and even at the best the prognosis is not good. Herbst, in the study of a series of 207 cases of malignancy of the thyroid, reported no cures in the sarcoma cases, 5 per cent of cures in the carcinoma cases, 20 per cent of five year cures in the malignant adenoma cases, and 33 per cent five year cures in the malignant papilloma cases. In all of our cases we have used radium except in the first three, and all of them have died within eighteen months from the time of first coming under observation. In the last three and one-half years I had fifty-one cases of thyroid disease to treat surgically; two of these were malignant and were not operated upon, forty-nine had thyroidectomies with the loss of one patient during the first twenty-four hours following opeeration from hyperthyroidism. In this locality it would seem the exophthalmic and toxic adenoma predominate, for in this small series we only saw five colloid goitres and four mixed colloid and adenomas which required operation, though showing no toxic symptoms. In the handling of the toxic thyroid, I know no study in my work that is more interesting and fascinating, and yet with every case I am more thoroughly convinced of the old dictum, "Experience is the best teacher." A competent evaluation of the patient's symptoms and general condition is worth as much to the thyroid surgeon as all of the pet methods of diagnosis.

In closing, I would like to make a brief comment on the question of basal metabolism readings. While I put a great deal of faith on this question of metabolic rate as a contributing point in diagnosis, at the same time we do not take this as an inflexible guide for operation, for so many conditions must be considered other than the metabolic rate of the individual patient. For instance, the metabolic rate does not tell us whether there is an impending or actual acidosis present. It does not tell whether the patient is worn out from loss of sleep or what is his degree of prostration. It does not give any information regarding the condition of the kidneys, nor does it help us much in estimating the amount of nervous instability. We get from it no guide as to the amount of degeneration of the liver. It does not help us in evaluating the strength of the myocardium and it tells us nothing of the psychic state. It does not

give us any insight into the question of blood pressure, which is often important, and it does not help us in determining whether the patient is suffering from great weakness and emaciation, or whether, as a result of the prolonged toxemia, the patient is unduly old from a visceral point of view. As a general rule, I like to see the basal metabolism rate about 35 or lower, but we have operated successfully in some cases in which the metabolism rate has been as high as 75. I believe every enlargement of the thyroid should have one or more basal metabolism readings made upon them, and I do not think the medical treatment of any thyroid condition should be condoned without the check of frequent metabolic readings on the case.

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POST-OPERATIVE CARE OF THYROID CASES AND SOME OF THE MORE COMMON COMPLICATIONS.*

By CHARLES CARROLL SMITH, M. D., F. A. C. S., Norfolk, Va.

The modern surgical treatment of thyroid cases has justified its soundness by lowering both mortality and morbidity. The principles underlying this success naturally fall into three groups or stages.

1. Proper preparation and conservative selection of time and type of operative procedure.

2. Judgment and good technique on the part of the surgeon and anesthetist.

3. Personal constant and intelligent care of the post-operative difficulties.

The relative value of these subdivisions of treatment is debatable, but certain it is that no other surgical condition makes a more urgent demand for close co-operation as well as individual responsibility on the part of those to which these stages of the treatment are relegated.

Post-operative cases of toxic thyroids may at times show such lightning-like changes and so many trying complications that success in no small measure depends on having an experienced personnel constantly on guard. Both literally and figuratively, it is of inestimable value to have a trained finger on the pulse at all times.

The thyroid gland is normally in close relation to the trachea, great vessels, and nerves of the neck, and when greatly enlarged may rest on the pleural dome or even encroach on the oesophagus. The difficulties and complications that follow its removal are those of any surgical procedure, edema, hemorrhage, or sepsis—differentiated, however, in their manifestations and dangers by the anatomical location of the gland and the consequent structures involved. The key-note of treatment, according to Crile, is anticipation, since to be of value the treatment must be timed ahead. Dilatory tactics are not for this type of case. I am sure the excellent results obtained by men who do a great number of thyroids is no doubt in a large measure due to intuition, if you please, to so designate that vague extra sense that develops with experience. Of special importance, however, is a thorough knowledge and understanding of the preoperative characteristics of each individual case that we may be better able to anticipate just what that individual is apt to do. Of no less importance is an understanding of the operative procedure, difficulty in controlling bleeding, size of the gland removed and the amount of cavity consequently left, the smoothness of the anesthesia and condition in which the patient left the table.

Proper post-operative care begins on the table with the application of a snug, smooth dressing held in place with adhesive and reinforced in our cases with a small roll of gauze, 15 by 15 mesh to the inch, and of sufficient width to make a wide collar applied to conform to the neck by a series of spiral reverse folds. No detail is too small to demand its share of attention; therefore, you will pardon mention of such obvious things as care in removing patient from table and guarding against exposure. All thyroid cases show some degree of hyperhidrosis and a change of the wet clothes should be one of the first attentions rendered when your patient is returned to the darkened room and left in the care of a cheerful, efficient and tactful nurse.

The patient is propped on pillows just as soon as practical and kept in a semi-recumbent position, for in this position breathing is easier and wound drainage is facilitated. Most patients fall into a restful sleep, which continues from three to six hours. This is contrary to the behavior of those distressing

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cases that do badly from the start on account of damage to the large internal organs more extensive than could be determined before operation. These cases do not rest easily and often die in this stage, the first six hour period.

Ice-bags are applied to the head and precordia if there is much toxemia. Tap water is given by rectum soon after the patient is returned to bed, 1,000 c.c. *stat.*, and 500 c.c. every four hours. All postoperative cases need fluids, and the thyroid case, instead of being an exception, should be an exaggeration of the rule. If more fluids are needed, a bilateral hypodermoclysis, according to Bartlett, is given, 1,000 c.c. each of normal saline containing sufficient novocain to make a 1/32 per cent solution, the purpose of the novocain being to lessen the discomfort and thus allow large quantities to be given. In addition, water by mouth is given as soon as possible and as freely as it can be handled by the case in hand. By maintaining the body fluids, we hasten elimination of waste products and the internal oxidation processes, and reduce to a minimum the intracellular acidosis which Crile has advanced as largely responsible for nausea in these cases. Vomiting may occur at frequent intervals for the first twenty-four hours, and rarely may persist for the first two days, but a return to normal equilibrium of body fluids will usually control all cases.

Next in importance to fluids, we find a restful and comfortable condition of the patient to be much desired. There is some dissension of opinion in regard to the value of morphia, some men minimizing its use on the claim that it ties up secretions, and others being of the opinion that it prolongs nausea, but we have found, like Crile, that to alleviate pain and secure absolute quiet "morphia is the *sine qua non*." The idea is to induce mental quietude on the part of the patient with tranquil submission or, to quote Crile once more, to maintain a state of negativity. Sufficient morphia should be given to keep the patient quiet and to prevent any acceleration of the pulse from muscular activity or emotional squalls. In keeping with this effort at quietude, we feel that all visitors should be excluded for some days, though at times the perturbed and wildly active mind of a toxic case, especially in the case of young girls, can be calmed and soothed by the presence of a sensible mother or close friend.

The dressing is not disturbed except for some unusual occurrence until the day after the operation; then it is done gently and with as few frills as possible. At the end of forty-eight hours the small silk skin sutures are removed, the drain lifted or removed, and the patient perhaps propped up a little higher. All drainage is removed on the third or fourth postoperative day as a rule. An enema is given on the second or third day, and two drachms of licorice powder on the night of the third or fourth day unless contraindicated, as in grave toxic cases. Cereals and starchy foods, carbohydrates and easily digested soft foods are given early, since we must remember that metabolism is accelerated in these cases.

Our patients are up on a back-rest in bed fairly early, but we make no effort to hurry convalescence by getting them out of bed as soon as they are able, and the more toxic the case the longer the rest in bed. It is impossible to maintain the passiveness of mind desirable if the patient is soon to become vitally interested in the daily happenings of a general hospital.

Hemorrhage after thyroid operations generally may be attributed to bleeding from the superior pole, the longitudinal veins just under the skin, or from the wound margins. Hemorrhage from the superior thyroid artery is a serious condition and requires immediate attention; it usually occurs in the first thirty-six hours. A large hematoma forms under the ribbon muscles and symptoms of tracheal pressure and respiratory obstruction may rapidly appear. The wound must be opened widely, the bleeding point isolated and tied with a ligature stitch. Hemorrhage may occur from this same source after infection and sloughing of the artery, and in such a case it may be necessary to prolong your dissection to clean tissue for a safe ligature. Packing and pressure or conservative measures are dangerous in this type of bleeding.

Hemorrhage from the longitudinal veins is far less serious. It is fairly safe in the absence of a large hematoma and freedom from the tracheal pressure to treat expectantly with ice-bags and a snug dressing.

However, a bleeding point properly tied gives the surgeon a more comfortable night. Bleeding from the skin edges is easily controlled by a wound clip or a properly placed stitch. Packing for hemorrhage in thyroids should be restricted to cases whose condition is such that more exact control is not possible. Transfusions are a great help at times and should be used promptly when indicated.

At any time after the third day on after operation collection of serum may appear in the wound, a complication of rather common occurrence due to the wide dissection necessary. This serum varies in amount from small blebs in the line of suture that can be eradicated by a small puncture with the point of the dressing scissors to a large serous exudate that should be opened and drained with a small piece of rubber tissue.

Frank infections in our experience are fortunately rare, but where you are accustomed to doing thyroids under local anesthesia with gas analgesia they will at times occur from a temporarily excited patient upsetting your sterile field by moving the head or even clutching at the neck with improperly fastened hands. In twenty-four to thirty-six hours after operation the neck may be thickened and edematous from the jaw to the wound or to the clavicle. Swallowing is difficult, breathing interfered with, and talking becomes an effort although the patient be in good voice. At times the edema will subside in a few days without special treatment and with no further trouble. It may go on to be followed by local heat, pain, and redness with a rise in temperature and leucocytes. In such cases the wound should be opened widely and drained. Hot moist dressings and the wound kept open with gauze are advisable. We are now using a gentian violet 1-5,000 or 1-10,000 in treating infected wounds, and one case of thyroid infection did well enough for us to look with favor on this agent as an adjunct in treating such cases.

Particular care should be exercised that an infection does not extend to the cellular tissue of the superior mediastinum and produce mediastinitis, a grave and usually fatal complication. Mediastinitis is generally preceded by a brawny induration of the neck, and there is difficulty in swallowing and breathing which is not relieved by free opening of the wound. The infection is often low grade; there is a persistent slight elevation of temperature and rapid pulse, and the patient gradually fades out in spite of all treatment. Mercurochrome intravenously is certainly worthy of a trial in this type of infection.

The presence of mucus from tracheitis is at times a trying complication. It can be much minimized by proper regard for the pretracheal fascia during the operative procedure. When it does occur the patient can often be made more comfortable by loosening the drain, changing the position, rearranging a dressing too snugly applied, or having her inhale steam, either plain or impregnated with the fumes from compound tincture of benzoin. The electric suction can be used to relieve the patient of the tough stringy mucus which accumulates in the throat.

Tracheitis is frequently accompanied by stridor which is both inspiratory and expiratory and is accompanied or followed by expectoration of mucus. This may be due to a simple tracheitis and, if so, clears up with the tracheitis. If due to injury to the recurrent laryngeal nerve, it is treated expectantly except for the administration of sedatives to produce relaxation and to quiet the patient. If the stridor persists and there is enough obstruction to cause the patient great fatigue, cyanosis may ensue and a tracheotomy is indicated. This procedure is apt to be too long delayed for, when needed, it should be done when cyanosis begins and is often of no avail in the late stages. With the nitrous oxide oxygen apparatus, oxygen under pressure may be used to dilate a collapsed trachea at will and this once dreaded complication is now little feared.

The heart is affected in practically all cases of hyperthyroidism. Deavor states that all expectation centers upon the heart in the treatment of goitre, but Crile is of the opinion that heart complications are rarely serious and usually very amenable to treatment. When there is any postoperative sign of need for cardiac stimulation, the preoperative course of digitalis therapy is repeated. If it cannot be taken by mouth, we use the aqueous solution hypodermically. In many cases, however, we have found that small doses of morphia are of as much value to the fail-

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ing myocardium as digitalis. During the first few hours after a thyroidectomy there may develop a bradycardia due to vagus stimulation. It is of interest only that it may be properly accounted for and readily clears up in a few hours without special treatment.

Injury to one of the recurrent laryngeal nerves at operation is a complication to be avoided by careful and proper technique. Serious injury to both nerves should not occur. Paralysis of both nerves is a distressing condition and treatment is both difficult and uncertain.

The accentuation of all the toxic symptoms of hyperthyroidism is a complication that formerly was well-known in all thyroid clinics. Proper preparation and judicious surgical procedure, especially in regard to the open treatment of the wound in toxic cases, has materially reduced the number of thyroid storms. Occasionally a mistake in judgment of the amount of operative procedure a patient can stand or a case demanding some interference in spite of toxicity will lead us to face this complication. These storms are of two types: The first is characterized by an exaggeration of some or all the toxic symptoms; the nervous symptoms are severe, there are tremors, twitchings and muscular activity, the patient cannot rest. The facies are anxious, the features show strain, the eyes are staring, the skin hot and moist with perspiration, and the temperature elevated from one to four or five degrees. The treatment of this type can be summarized as morphia, fluids and ice. Morphia is given in sufficient dosage to keep the patient quiet. Fluids are given freely by mouth, rectum, subcutaneously and at times intravenously. Up to this time ice has been used about the neck and precordia, but now the patient must be surrounded with it. Ice-bags are applied to both sides of the lower extremities, to the front and side of abdomen, to the back of neck, the forehead and the vertex; only the thorax is omitted. Blood transfusion has been advocated since it not only supplies new healthy blood but dilutes the existing toxemia; we have never found this to be necessary provided the fluid intake is sufficient.

The second type of thyroid storm is marked by depression and resembles surgical shock. The pulse rate is high and the temperature is elevated, but the patient shows no exaggeration of nervous symptoms. Often she is aroused with difficulty, lies quietly with eyes closed, her face is pallid, the skin is hot but does not leak perspiration. The treatment of this type requires no morphia but does call for increased fluids as outlined in the other type.

Iodine in our hands has not given the uniformly good results that have been reported in recent literature. Perhaps enthusiasm has led us to use it injudiciously or ill-advisedly, and more experience in its use will be productive of better results. Certainly Plummer's investigations are encouraging in regard to the exophthalmic type.

Myxedema and tetany when they do occur require thyroxin and calcium lactate respectively; response to such treatment is satisfactory in both cases.

We think it wise to impress thyroid cases of toxic and exophthalmic type with the fact that they are not to expect entire relief from local or general symptoms, that the real purpose of the operation is to prolong life and prevent further damage to the heart and nervous system. True exophthalmic goitre is probably never completely cured since irreparable damage to vital structures has already occurred. Tact must be used in explaining such things to your patient, for great harm can be done to the over-taxed nervous system of such cases by too much and too frank pessimism.

The condition of patients weeks and months after operation is of interest, and toxic cases should be followed for at least a year as a routine. We request the patient or the physician in charge to report her condition at the end of the first and third months, and whenever it is possible we strive to have basal metabolism rates charted at the end of six months and the year. Thyroidectomized patients should be returned to the care of an internist or the family physician, for, though the source of the toxic secretion has been removed with the thyroid, a regimen of rest, psychotheraphy, directed diet, removal of all causes of mental or physical disturbances, and symptomatic drugs are required to restore the patient to the status of a useful individual.

That the patient may co-operate with the attending physician along these lines, it is

helpful for them to leave the hospital with definite instructions as to their future conduct and mode of living. Some such decalogue as the one employed by Ochsner answers this purpose, and I will close with such of these as we deem important:

1. Avoid all excitement or irritation, like attending receptions, shopping, church work and politics. If anything happens to annoy you, put it off for a week.

2. You should get an abundance of rest by going to bed early and taking a nap after luncheon.

3. You should have an abundance of fresh air at night; consequently, you should sleep with wide open windows, or on a sleeping porch.

4. You should take nothing that irritates the nervous system, like tea, coffee or alcohol. Of course, you should not use tobacco in any way.

5. You should eat very little meat. If you are very fond of meat, take a little beef, mutton, or breast of chicken, or fresh fish two or three times a week.

6. You should drink a great deal of milk or eat things that are prepared with milk, such as milk soup, milk toast, etc.; also cream and buttermilk are especially good for you.

7. You should eat an abundance of cooked fruits and cooked vegetables, or very ripe raw fruits, or drink fruit juices prepared out of ripe fruit.

8. You should eat eggs, bread, butter, toast, rice and cereals.

9. You should drink an abundance of good water, or, if this is not available, you should boil your drinking water for twenty minutes or drink distilled water.

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805 *Medical Arts Building.*

THE DIAGNOSIS IN TOXIC THYROID DISEASE.*

By ROBERT CAMDEN WHITEHEAD, M. D., Norfolk, Va.

In investigating a case of suspected thyroid toxemia, the question is not primarily, has the patient exophthalmic goitre or thyroid adenoma with hyperthyroidism, but is the patient suffering from a toxemia referable to the thyroid gland. In cases of long standing, with manifest thyroid enlargement, with exaggerated symptoms of thyroid intoxication, the answer is readily given. But these advanced cases constitute bad surgical risks and offer little hope of successful treatment by other measures, because of the degenerative processes that have developed in other organs. A larger percentage of correct diagnoses in the early stages would materially aid in further reducing the low mortality rate already obtained by the splendid surgical technique that has been developed. This can be done only by constantly carrying in mind the possibility of the presence of thyroid disease and the careful and complete investigation of all suspicious cases that come under our care.

The classification of diseases of the thyroid gland as laid down by Plummer is now generally accepted and has removed a world of so-called confusing monumental nomenclature. He classifies diseases of the thyroid gland as follows:

1. Diffuse colloid goitre.
2. Adenomatous goitre without hyperthyroidism.
3. Adenomatous goitre with hyperthyroidism.
4. Exophthalmic goitre.
5. Myxedema.
6. Cretinism.
7. Childhood myxedema.
8. Thyroiditis.
9. Malignant disease of the thyroid gland.

Of these, the exophthalmic goitre and the adenomatous goitre with hyperthyroidism are the principal toxic diseases. Thyroiditis frequently produces toxemia with all its symptoms, including increased basal metabolic rate. In such a case the picture so closely resembles exophthalmic goitre that the latter is the diagnosis made and the true condition is discovered in the pathological laboratory.

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The same is true of malignancy of the thyroid, which is frequently accompanied by increased glandular activity. Boothby states that it cannot, under these conditions, be positively differentiated from chronic diffuse nonfebrile thyroiditis. The diagnosis is established by surgical exploration and pathological examination.

The general symptom picture of adenoma with hyperthyroidism and that of exophthalmic goitre closely resemble each other, because in both there is an increased thyroid activity. This picture Boothby states is the resulting secondary manifestation of an increased rate of basal metabolism. This increased rate, in the case of adenoma, is due to an abnormally high concentration of thyroid in the circulation.

In the exophthalmic goitre there is increased concentration plus some abnormality of the thyroid secretion. Eighty per cent of all cases occur in females. In a series of 1,402 cases of both types reported by Boothby, the average age of 366 cases of toxic adenoma was forty-eight years, the youngest being under nineteen and the oldest seventy-nine years. In the 1,036 cases of exophthalmic goitre the average age was thirty-seven years, the youngest being nine years and the oldest sixty-nine years. In 714 cases under forty years of age the goitre of the exophthalmic type greatly predominated. Between the ages of thirty and forty the percentage was 13 per cent adenoma and 87 per cent exophthalmic. This ratio was gradually reduced as ages increased until above sixty years the ratio became 77 per cent adenoma to 23 per cent exophthalmic. There is a striking difference in the duration of the goitre in the two types. The average duration of the goitre in the adenomatous cases, before coming to examination, was eighteen years. In the exophthalmic goitre it was 4.2 years.

The onset of the disease is usually gradual and the exact date of the beginning of symptoms uncertain. Two or three years previous to coming for examination the patient notices that she is more nervous than formerly and more easily excited. In the early stages of the disease there is a sense of well-being and enthusiasm for work, but she is unable to maintain either mental or physical effort for any length of time. There is the history of excellent appetite, but the patient notices that in spite of taking abundantly of food she steadily loses weight and strength. There is a sense of giving away of the knees. The skin is moist and warm with a tendency to sweating, especially of the palms and over the epigastrium. The pulse is rapid and the heart's action heavier; especially is this noticed on going up stairs; at a later stage there is reported palpitation while at rest. The history is that just before coming for examination there was a marked exaggeration of symptoms possibly accompanied by enlargement of the goitre. There is a moderate tremor and dyspnea on exertion.

The above symptom picture is that of hyperthyroidism as found in cases of adenomatous goitre. If the case is one of exophthalmic goitre the subjective symptom will include, in addition to the above, attacks of nausea, vomiting and diarrhea without apparent cause, possibly jaundice, irregular or suppressed menstruation, nervous and possibly mental symptoms of varying degree. Insomnia is frequently complained of, as is also cramping of the hands and feet. There is increased irritability and altered disposition. In advanced cases there may be a history of various psychoses, phobias and obsessions and the maniac depressive state. The acute mania, which frequently is a terminal symptom, is attributed to a sudden and intense thyrotoxicosis.

Examination.

Physical examination will show a poorly nourished patient, weak but very alert and bright. The skin is warm and moist. The palms are usually damp and cold. The hair is poorly nourished and there may be baldness. Pigmentation is not uncommon, usually of the face, neck, nipples, and the flexures of the arms and thighs. This in some cases may be very deep, resembling Addison's disease.

The eye symptoms are of the greatest importance. In exophthalmic goitre there is more or less prominence of the eyes, and in advanced cases they may be pushed almost out of the orbit; under such circumstances there is apt to develop ulceration of the cornea due to drying, as the lids never entirely cover the eye-ball. The degree of exophthalmos may be anywhere between a slight

prominence and the grave condition. It is to be remembered, in border line cases, that some people have rather prominent eyes who have nothing wrong with their thyroid gland, and that a diagnosis is not to be made from this symptom alone.

There are many eye signs all based upon this condition: Graefe's sign—the lids fail to follow in a normal manner, when the eye ball is rotated downward; Dalrymple's sign—the palpebral fissure is wider open than normal; Stellwag's sign—infrequent, irregular and incomplete winking; Mobius' sign—insufficient power of convergence for near objects; Joffroy's sign—when the head is bowed and the patient asked to look up without changing the position of the head, the forehead is not wrinkled, as occurs in health. These signs are all due to the eye condition and are commonly associated together.

The teeth are usually bad and undergo rapid decay. The thyroid gland is usually only moderately increased in size.

In adenomatous goitre there is an unsymmetrical enlargement consisting either of a single small adenoma or a large mass of several small tumors grouped together. Boothby states that the small single adenoma is very apt to produce hyperthyroidism, while the larger cystic colloid type of adenoma does not.

The enlargement in exophthalmic goitre is smooth and symmetrical, and generally involves both lobes. It is usually greater in the right lobe, due to hypertrophy and hyperplasia of the entire gland.

In the latter type of goitre a bruit is heard over the thyroid vessels. In adenoma this is generally absent, occurring in only 4 per cent of cases according to the reports of the Mayo Clinic. This murmur is systolic in time, or continuous, and may be accompanied by expansile pulsation and thrill.

The circulatory derangements are among the most constant manifestations. The pulse rate is usually rapid and was formerly supposed to be always increased in frequency, but since being checked by basal metabolic reading, it has been discovered that there is a small percentage of cases in which the pulse rate is not increased, though in the majority the basal metabolism rate and pulse are increased in direct proportion. Sturges and Thompson of the Peter Bent Brigham Hospital state that the resting pulse rate and the basal metabolic rate in hyperthyroidism show a fairly constant relationship in a high percentage of cases. In a study of 496 cases, determination of basal metabolism on 154 cases of hyperthyroidism showed a pulse rate of 90 or more associated with a basal metabolism rate of plus 15 per cent or more in 84 per cent. In seventy cases in which the basal metabolic rate fell to normal, there was a corresponding decline of the pulse to 90 or lower in only 78 per cent. Fifty-two cases on which a number of basal metabolism readings were taken showed a correspondence of pulse and basal metabolic rate in 85 per cent. In 106 cases reported by the same authors suffering from various diseases in which basal metabolic rate was normal, a pulse frequency exceeding 90 occurred only five times. This is believed by the authors to be a point in differentation in nervous patients presenting symptoms suggestive of hyperthyroidism, since the above studies show that a resting pulse below 90 is seldom and below 80 rarely associated with an increased basal metabolic rate.

The cardiac action is increased in strength as well as rate, the apex beat is more visible and may be found to the left mid-clavicular line. The area of cardiac dullness may be increased 1 or 2 c.m. to the right. There is a precordial heave, with possible movement of the thoracic wall, all of which shows that dilatation has occurred. As a rule the rhythm is regular, but in grave cases various arrhythmias are observed and murmurs are heard at apex and base. The heart sounds are loud. There may be vasomotor disturbances, as pruritus, urticaria and dermographia. These symptoms are so much in evidence, so dominate the picture, that a diagnosis of grave cardiac disease is often made, overlooking entirely the underlying causation, the thyrotoxicosis.

Blood Pressure.

Phillips of the Crile Clinics states that the blood pressure in toxic goitre resembles that seen in aortic regurgitation, viz., an increased systolic and a low diastolic pressure, the pulse pressure being increased above the normal limits. Plummer found that 27 per cent of patients over forty years of age suffering with

toxic adenoma had a systolic pressure of 160 or more. Boothby claims that hypertension is very rare in exophthalmic goitre and that if hypertension exists, as is evidenced by a high diastolic pressure, the evidence is in favor of adenomatous type. Our limited experience has been somewhat different. With the exception of one case, complicated by pregnancy and nephritis, in which the systolic pressure was over 200, our cases have shown both a low systolic and and a low diastolic pressure, usually around 110—60. The tremor of toxic goitre is a variable one. It may be so forceful as to be annoying, and involve not only the hands but the head, or so slight as to be discovered with difficulty. It is involuntary and about eight or nine to the second.

Laboratory Investigation.

The laboratory examinations of the blood and urine show practically no abnormalities. There may be a transient glycosuria, which Boothby states occurs in only 2 per cent of cases. Albuminuria, if present, is due to causes other than the thyrotoxicosis. There are several tests for aiding in the diagnosis of toxic disease of the thyroid gland, the best known being the basal metabolic rate and the Goetsch test. There is also the thyroid feeding test. Packages for this purpose may be purchased, consisting of twelve capsules, divided into three sets of four capsules each of one-half or two grains for a three day course. There is a chart for reading the pulse five times daily. A positive reaction consists in the developing of symptoms of hyperthyroidism. When these symptoms become manifested, the test is to be discontinued at once. This test should not be used in case of outspoken hyperthyroidism. The Goetsch test, the injection of five mil. of 1 to 1,000 adrenalin in solution results in an increase of pulse and blood pressure of ten points; increased respiration, sensations of heat and cold, nervousness and emotionalism. The intensity of the reaction is in direct proportion to the degree of toxicity and lasts for one and one-half hours. Dr. Crile states that it is positive in 85 per cent of cases. That it is distressing to the patient is positive, and is with difficulty administered a second time. If negative, there is little or no reaction.

Loewi's mydriasis adrenalin test consists in the instillation of one or two drops of standard adenalin solution into the conjunctival sac, which causes the pupil to dilate in one-half hour, lasting for one and one-half hours. Sugar tolerance test is based on the low sugar tolerance of thyroid intoxicated cases. These case tests are not now widely used.

The most important of all laboratory procedures in cases of suspected hyperthyroidism is the estimate of the basal metabolic rate, as most of the tests and diagnostic signs of these diseases have been checked by and valued accordingly as they have coincided with the found rate of basal metabolism. This knowledge of the basal metabolic rate is not only of value in diagnosis, but also in prognosis and as a check on the efficiency of remedial agents used. When clinical calorimetry was first introduced and variation in the basal metabolic rate found in many different diseases, it was thought that this laboratory procedure would have a very broad field in general medical diagnosis, but as time passed and knowledge increased it was shown that in diseases other than those of the thyroid gland the findings were not sufficiently consistent to be of real value, so that at the present time the estimate of the basal metabolic rate is confined almost entirely to disease of the thyroid gland. To be of real value these readings should be as nearly perfectly correct as a perfect technique can make them, and all the necessary requirements must be carefully carried out. The sources of error may be divided into two groups—those due to error of the technician and instrument, and those due to faulty preparation of the patient. Errors of the first class are easily located and easily prevented by proper care and attention, as the procedure is quite a simple one. On the other hand, a perfect preparation of the patient, especially in cases of high toxicity, is a difficult proposition. The patient should be without food for twelve hours, free from muscular activity for the same length of time, and as free from mental activity and excitement during this period as she can be made.

It is the custom of some to take the rate in the post-absorptive period after one hour bodily rest and in some cases the patient comes to the doctor's office for this purpose. This I am certain is an insufficient time to eliminate the effect of muscular activity. The late Dr. Hough once told me that it was impossible to

accomplish the desired purpose in this length of time. McCleod requires fifteen hours' rest before the reading is taken, the patient sleeping in the calorimeter.

Dr. Boothby in a personal letter stated that in 5 per cent of all cases a period of four to five days' hospitalization would be required before correct reading was obtained.

The influence of mental excitement is difficult to estimate and still more difficult to eliminate. In order that this influence shall be removed, it is necessary that the patient be left alone and be as quiet as possible. This is best accomplished at night when the patient is asleep and in a hospital. We have found that preparation for the taking of the basal metabolic rate is best made by having the patient spend the night in the hospital in a private room. Under these circumstances, we have muscular rest for twelve hours, as nearly as possible freedom from mental activity and excitement, and assurance that the patient has had no food during this time. This latter is by no means assured when the patient spends the night at home; further, the break of the rest period and mental excitement of going to the doctor's office absolutely breaks the technique of preparation. Let me impress the importance of this. An erroneous high reading may lead to measures being instituted which may result in the reduction of a normal thyroid activity.

Dr. Boothby says that unfortunately the clinical value of the basal metabolic rate may become discredited in some localities through failure to carry out all technical and physiologic details necessary for an accurate reading. It is now the general opinion that there can be no hyperthyroidism without an increase in the rate of basal metabolism.

In the examination of 1,111 cases of toxic adenoma at the Mayo Clinic, the basal metabolic rate was found above normal in 100 per cent. In 2,969 cases of exophthalmic goitre the basal metabolic rate was above normal in 98 per cent, and the remaining 2 per cent came under observation during periods of remission.

The above figures show that an increase in basal metabolic rate is practically always present in the toxic thyroid disease; nevertheless, a diagnosis should not be made from this alone, though it is strong presumptive evidence, until all other sources of possible increase have been eliminated, or other evidences of thyroid involvement brought to its support.

The X-ray is not without its value in these investigations, as the picture will show definite enlargement of the gland, and under the fluoroscope the mass rising and falling with swallowing is almost pathognomonic. It will also reveal the presence of sub-sternal goiter.

Differentiation.

The differentation of these two toxic thyroid diseases is not difficult. The absence of exophthalmos and the eye sign is almost characteristic of toxic adenoma. The blood pressure, if high, points to adenoma; if low, to exophthalmic goitre. The palpation of the gland reveals the presence of the tumor and the asymmetry of the enlargement on the one hand, and the smooth symmetrical hypertrophy on the other. The question of age and duration of the disease will also assist in distinguishing the two types. The small percentage of cases without visible thyroid enlargement and the circulatory symptoms will point toward serious cardiac disease. Here the basal metabolic rate is of value, though it must be borne in mind that cardiac decompensation gives an increase in the basal metabolic rate in 76 per cent of cases, as reported by Hamburger and Levi, Peabody, Wentworth and Barber. In the latter disease the increased rate is in direct proportion to the decompensation, and will not, therefore, be high unless the decompensation is far advanced. It must also be remembered that myocardial degeneration is one of the results of prolonged toxic thyroid disease. Such cases illustrate the necessity of careful and complete investigation.

The loss of weight and strength may suggest tuberculosis, and a transient glycosuria may be responsible for the diagnosis of diabetes. The proper investigation of the case should make elimination of these diseases fairly easy.

Increased tendency to fatigue and loss of strength, together with tremor, vasomotor disturbances and the nervous and emotional symptoms of thyrotoxicosis, bring into the feld of differential diagnosis those ever-present bug-bears, psychoneurosis and neuro-circulatory asthenia. Here the rate of basal

metabolism is of the utmost value, for these cases have a normal basal metabolic rate. The gastric crisis of exophthalmic goitre may lead to a suspicion of acute abdominal trouble.

A neurotic patient with large colloid goitre may present symptoms closely resembling a thyroid intoxication. If these manifestations are due to a neurosis, the basal metabolism will be normal or below.

Finally, in the diagnosis of toxic thyroid disease, both direct and differential, no one symptom or sign, and no special laboratory procedure should be considered as pathognomonic. By careful grouping of all the findings and through investigation of all suspicious cases, early diagnosis will be achieved and proper treatment instituted before gross damage has been done to the vital structures.

805 *Medical Arts Building.*

MODERN VIEWS ON DISEASES OF THE THYROID GLAND, WITH SPECIAL REFERENCE TO HYPOTHYROIDISM AND HYPERTHYROIDISM.*

By J. SHELTON HORSLEY, M. D., Richmond, Va.

The diseases of the thyroid gland have always been peculiarly interesting because of the greatly varying forms they may assume. From a large benign adenoma weighing several pounds but causing no symptoms, except from mechanical weight and pressure, to the small toxic thyroid adenoma is a far cry. In the latter instance the growth produces marked constitutional symptoms which are well known. No benign tumor elsewhere in the body gives intrinsically constitutional symptoms. The hyperplasia of the thyroid gland constituting a diffuse hypertrophy that might be called a kind of work hypertrophy gives rise to symptoms similar to those of a toxic thyroid adenoma. This type of hyperthyroidism, termed variously exophthalmic goiter, Graves' disease, Flajani's disease, Parry's disease and Basedow's disease, has excited the interest of many of the outstanding figures in the medical profession. The opposite of this condition is hypothyroidism. During the early professional career of Osler one of the pieces of research work that he often admiringly referred to was the discovery of cretinism and the various forms of myxedema which arise from the deficiency of thyroid secretion.

These two extremes, then, excessive thyroid secretion and deficient thyroid secretion, cover a multitude of varying symptoms, and while the typical cases are easy of recognition, the mild cases often escape notice. The large simple adenoma may predispose to either hyperthyroidism or to hypothyroidism. Sometimes the adenomas degenerate and absorption of their products gives symptoms. Occasionally, too, pressure from a simple adenoma may cause hypertrophy of other portions of the gland which will then produce an excessive amount of secretion; though the usual effect of such pressure is diminished secretion.

Malignant tumors of the thyroid may run a rather rapid course, but are difficult to detect in their incipiency. In a case of mine the patient was referred to me after the cancer had persisted in the left thyroid lobe for several years and had caused paralysis of the vocal cord on the left side by pressure on the left recurrent laryngeal nerve. In this instance the growth had infiltrated the sternomastoid muscle, and sections taken at an exploratory operation showed a very highly differentiated type of tumor with acini almost resembling normal thyroid tissue growing into the muscle. This, of course, indicated a mild cancer which would coincide with the history of several years' standing. The growth was so extensive that radical operation could not be done, but radium needles were inserted and deep X-ray treatment was given with much temporary benefit. On the right side, however, there was apparently still sufficient thyroid tissue to prevent symptoms of hypothyroidism.

The various stages of hyperthyroidism have been fully considered by many observers, and the study of this condition has been greatly helped by tests for basal metabolism. The mild types of hyperthyroidism seem to have been recognized, though comparatively little attention has been paid to mild hypothyroidism. One of the best pieces of work on thyroid diseases for several years has been done by Dr. W. H. Higgins, head of the Medical Department of St. Elizabeth's Hospital, on the mild type of hypothyroidism. In a paper read before the Section on Medicine at the meeting of the

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*From the Surgical Department of St. Elizabeth's Hospital, Richmond, Va.

American Medical Association in May, 1925, Dr. Higgins reported a very interesting study of this condition. Some of these patients came originally for surgical treatment and after being examined both from a general surgical standpoint by me and urologically by Dr. Dodson, we could find nothing to account for the vague symptoms. Careful medical observation by Dr. Higgins together with accurate basal metabolism tests often demonstarted hypothyroidism, and proper treatment frequently afforded relief. The symptoms were not those usually considered typical of a hypothyroid condition. Several of the patients, for instance, were rather thin. None of them had a slow pulse. In all of them the basal metabolism varied from minus 11 to minus 25.

Dr. Higgins finds that a different syndrome presents itself in the milder forms of hypothyroid conditions from what would be expected from our knowledge of the well developed cases. Dryness of the skin and the hair are common to both types, but in the series of twenty-three cases it was present in a little more than one-half. Higgins noted a premature wrinkling of the forehead, which may have some diagnostic bearing. Nervousness of a local nature was found to be one of the most frequent complaints. In some patients there was a tingling of the extremities, or constriction about the head. In others there was depression, emotionalism, or other evidence of a neurosis. These symptoms are usually considered indicative of a hyperactive gland, and are commonly not expected in hypothyroid states. In fourteen of the twenty-three histories there were vague pains, which constituted the chief symptoms in the illness of the patients. The pain was often referred to the abdomen and seemed to be a source of considerable annoyance. It is such patients that without careful examination may be submitted to an operation which cannot do any good if there is no abdominal pathology present, and which undoubtedly may do much harm. The pain seems to bear no particular reference to any organ or nerve distribution, and this is a characteristic feature. Constipation, headache and localized edema were observed by Higgins in many of these cases. The edema occurred in seven patients. In six it represented a slight pitting of the ankles, a certain tightness of the fingers, and a moderate fullness of the eyelids. Obesity is relatively uncommon in these patients, and underweight is not infrequently found. Incipient hypothyroidism, according to Higgins, is commonly found in women around the menopause, and apparently bears some relation to the activity of the ovaries.

Hyperthyroidism, especially mild hyperthyroidism, has been more fully studied by various observers than hypothroidism. The symptoms of marked exophthalmic goiter with flushing of the skin, a rapid pulse, the venous thrill over the thyroid gland, prominent eyes, and congestion of the conjunctivae are well known. The milder types, however, are sometimes puzzling, and it is in these cases that a basal metabolism gives valuable information.

In the Virginia Medical Monthly, March, 1925, appeared a paper of mine on operations on the thyroid gland which was read before the Medical Society of Virginia the preceding October. In it were reviewed the operations on the thyroid gland at St. Elizabeth's Hospital for the year ending October 10, 1924. At that time we followed rather closely the Crile technic in ligating the superior thyroid arteries as a preliminary step in operations for hyperthyroidism. Often both superior thyroids were tied at intervals of a week or more, and a partial thyroidectomy was done a few months later.

In the paper mentioned I reported thirty-five operations performed upon twenty-one thyroid patients. Ten of the cases were simple adenomas or colloid goiter, and eleven were hyperthyroid cases, twenty-four operations being done on eleven hyperthyroid patients. There were no deaths. We have not secured ultimate results in them all, but apparently all of these patients have been greatly benefited and many are practically well. One, for instance, gained fifty-four pounds in about four months from the time of the thyroidectomy. Her pulse came down from 120 when she entered the hospital to 72 a few months later.

Since reading this paper we have had eleven new thyroid cases and one recurrence. Seven were cases of hyperthyroidism, which includes toxic adenomas, and five were simple colloid goiters or simple adenomas. There were seventeen operations on twelve patients. In only

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one of these cases were the thyroid arteries ligated. This was early in February, 1925. Sinch that time we have done no ligations. All of these patients had a satisfactory recovery, making a total since October 8, 1923, of fifty-two operations on thirty-two consecutive patients without a death.

The principles of gentleness and of careful technic, as elaborated by Crile, are most valuable and are strictly followed. It is important, however, to remember that the technic of any clinic, no matter how successful, should not be blindly adopted. It seems to me that a combination of the administration of Lugol's solution with Crile's gentleness and care in the thyroidectomy makes an ideal procedure in the therapy of hyperthyroidism. The patient is operated upon under ethylene anesthesia, usually in the operating room, though when the operation is in several stages some of the stages are done in the patient's bed.

Treatment for a typical case of hyperthyroidism would be, first of all, admission to the hospital and a careful study by the medical department, which, of course, includes a basal metabolism test. The general condition of the patient and the rate of the basal metabolism influence us in the decision about operation. If the case is comparatively mild and yet operation seems advisable, it is done in four or five days. If severe, the patient is kept in bed for several weeks. In the meantime, Lugol's solution is given, about twenty to thirty drops a day. In some cases of hyperthyroidism apparently from toxic adenoma Lugol's solution seems to bene'it; in others it is not helpful. We give it in all cases and discontinue it in those it does not help after two or three days. The patient remains as quiet as possible in bed and takes an abundance of water and milk. An ice-cap is placed over the neck, one over the heart, and sometimes on the head. The usual preliminary hypodermic and ether jacket are used several days before the operation. The operation is done as early in the morning as possible. The patient is brought quietly to the operating room with the face covered and, preferably, with light cotton stuffed in the ears. This preliminary preparation of covering the face and stuffing the ears with cotton is done for several days before operation. Ethylene is given on the stretcher, and the patient, when partly under the anesthetic, is removed to the operating table.

The area of operation is injected rather freely with a solution of one-half of one per cent novocain made up in Ringer's solution from freshly distilled water. The technic of Crile is followed, making the incision slightly curved downward from the sternomastoid muscle on one side to a corresponding point on the other. The lower portion of the incision comes to about one and one-half inches above the sternum. The flaps are dissected up and down, and more novocain is injected. The ribbon muscles are split longitudinally from the larynx to the sternum. The thyroid isthmus is divided in the midline almost to the trachea. On the right side the isthmus is dissected from the trachea for about three-fourths of an inch, and the dissection is carried along the upper border of the thyroid, where the attachments to the region of the larynx are clamped and divided. After mobilizing the right lobe in this manner, particularly after freeing the upper attachments, it comes easily into the wound. The vessels are clamped along the outer margin of the thyroid and the thyroid lobe, being thus blocked off vascularly, is dissected from its outer margin to the trachea. With the finger on the trachea and the under portion of the isthmus freed from the trachea, the general direction of the dissection can be readily governed. In this way a thin layer of thyroid tissue is left covering the recurrent laryngeal nerve and the tissues around it. The clamped vessels are quickly controlled by whipping over two or three bleeding points at a time with plain catgut in a needle.

If the patient is not doing well during the operation, the wound is packed with gauze wrung out of a 1-10,000 solution of acriflavine, and the patient is returned to bed after removing only one lobe. About two days later the other thyroid lobe is removed and the wound closed, or, if the patient's condition is not satisfactory after the removal of the second lobe, acriflavine packing is again inserted and the wound closed later at a third operation. If the packing be left too long, suppuration is prone to occur. When the packing is removed it should be done with great care. Peroxide of hydrogen is freely applied to the packing. We sometimes leave

small tubes in so the peroxide of hydrogen can be introduced in this way.

The absence of unnecessary trauma and stopping the operation at any point at which the patient seems to be decidedly growing worse, are valuable points in this technic. Of course, it requires good teamwork, and particularly skillful anesthesia, but with these conditions some cases of hyperthyroidism that are apparently hopeless by other procedures can often be saved.

The postoperative treatment consists in quiet, an abundance of water, and ice-caps. A certain amount of Lugol's solution may also be given if the stomach can retain it, though, if the patient has taken Lugol's solution before the operation, it will not be necessary to push it so strenuously afterwards. Recently, we have given glucose intravenously. This seems to be established on principles that would be helpful in the postoperative treatment of any advanced case of hyperthyroidism. Possibly I can best illustrate by reporting a case:

The patient, V. B., a white girl, twelve years of age, and the youngest case of marked hyperthyroidism that I have seen, was admitted to the hospital with typical exophthalmic goiter. Her symptoms began about a year before admission, and for a while under careful treatment by her family physician they improved. About two months before admission she had some gastro-intestinal upset, and the hyperthyroid symptoms became much more pronounced. On admission to the hospital her pulse could not be accurately counted, it was around 170. It is recorded in the chart as "?". She was placed on ice-caps, Lugol's solution and quiet, and her pulse ranged from 130 to 148 for the following ten days. After that for two days it came down to 118, and when she was asleep it would occasionally drop to 100. She was operated upon the fifteenth day after admission to the hospital. The right thyroid lobe was removed, employing the technic which has been described. The pulse was rather rapid, and after removing the right lobe the wound was packed with acriflavine gauze. The following day her temperature reached 103. Her pulse was very rapid and running in character. A vein was opened and an intravenous cannula inserted, and 10 per cent glucose in Ringer's solution made with freshly distilled water was introduced into the vein. She had about 2,500 c.c. of this in twenty-four hours. Within fifteen minutes after administering this solution her pulse became more regular and was about 145. Two days after the first operation most of the left lobe was removed. The intravenous solution was then continued for two days, and three days after the second operation her pulse was 124 and her temperature 99. She made a smooth convalescence.

The intravenous glucose seems a valuable addition to the postoperative therapy. These patients burn up a quantity of carbohydrates, and if they cannot secure carbohydrates they use tissue cells. By supplying abundant glucose the necessary fuel is furnished and the tissues are protected. Water itself, of course, is important, but water with glucose, and especially in Ringer's solution introduced continuously into the vein with little or no pain, is a most helpful after-treatment.

These things have changed my whole attitude toward surgery of hyperthyroidism within the last few years. Formerly, I dreaded to see a case. The old method of watchful waiting till a so-called cycle was over seems indefinite and vague, and frequently after doing a beautiful operation the patient died from acute hyperthyroidism. When every vessel is individually clamped and tied and the wound accurately sutured, the operation appeals too much to the anatomical and mechanical sense and biologic principles may be neglected. The methods of Crile with gentleness, quickness, a minimum of trauma and the ability to stop the operation on a hyperthyroid patient at any point at which the patient's resistance seems too much taxed, have converted what was formerly an annoying problem into one of the most satisfactory chapters of surgery.

617 *West Grace Street.*

DISEASES OF TEETH OF SCHOOL CHILDREN. THREE YEARS' OBSERVATION. THE REMEDY.*

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I esteem it a great pleasure and privilege to have been invited to address you this evening, and especially so since my subject is one in

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which all of us are so vitally interested. Please be assured that I appreciate the honor.

In the preparation of this paper, many authorities have been consulted. Their names were intentionally omitted from the text in order to avoid diverting from the subject itself. Credit, however, is hereby given wholeheartedly to those whose work has inspired the feeble efforts expressed in these pages.

One of the most important problems confronting the civilized nation today is the maintenance of public health. This is not a problem peculiar to the present generation. It involves a situation which has been combated since the earliest days of civilization. History tells us that the primitive tribes which could best cope with the problem of keeping their individuals in good physical condition emerged as leaders in their struggles for existence and supremacy with neighboring tribes. We need but a glance at the Egyptian, Greek and Roman achievements, and a consideration of the underlying principle of their superiority, to determine that the superior body and mind are the fundamental factors in their achievements. The early civilization along the Nile fell because, during its era of prosperity, it deviated from its ideal mode of living. This is repeatedly seen throughout the history of man in his struggle for superiority.

If we analyze the life, habits and nutriment of a Spartan, Athenian, Roman, Macedonian, or any other subject of a great race at the time when it was at the zenith of its power, we find that each led a comparatively simple life, with cleanly habits, plenty of outdoor exercise and, above all, a simple diet. These three factors constituted the whole secret of a successful and healthy life, and it is with the latter subject that I intend to deal in the following paragraphs.

Diseases of Children's Teeth

Since this is a very broad subject, it will be necessary for me to present it only in a general way. Caries is the most prevalent and common malady with which we have to deal. It begins in the mouths of children a few months after the teeth erupt and continues until they are lost; influenced greatly by diet, habits and environment. Malnutrition is the most predisposing cause.

Dr. McCollum, one of the best known authorities on diet and malnutrition writes:

"Malnutrition is not, as many have hitherto believed, ordinarily the secondary result of these physical defects which the clinic seeks to remedy, but it is the primary cause from which those physical defects generally arise. Furthermore, the present widespread view that the most important task in hand is the medical treatment of those children in whom clinically discernible defects exist is a mistaken one. First in importance, from both the standpoint of the physically defective child and that of the national welfare, is the establishment of nearly as possible with the scientific precision necessary to insure optimal well-being." The clinic should occupy second place in the scheme of human betterment.

Since malnutrition produces deficiency diseases and the right kind of nutriment develops healthy individuals, is it not our duty and our obligation to future generations to place these facts before the parents for the betterment of the growing young?

What is wrong with civilized man as an animal? Has he not both the medical and dental professions working for him to prevent these diseases and defects? Yes, but we have all strayed so far from the fundamentals of natural living that the combined knowledge of all the scientists does not keep us well, and does not prevent disease. The practice of prevention is so closely associated with disease itself that we have come to believe in vaccination as the natural preventive of smallpox, in cod-liver oil as the logical preventive for rickets, in pastuerization as the natural method of securing safe milk, in early orthodontia as the preventive for malocclusion, and in extension of the cavity walls of a carious tooth to the sound enamel structure as dental prophylaxis.

Valuable as these procedures are, we are forced to the realization that not one of them is truly preventive. The fundamental truth which we have lost sight of is the inherent ability of the body cells, under normal conditions, to build perfect structures, and to establish and maintain a natural immunity to disease. What must these cells have to build a perfect structure? The human body is made up of sixteen elements, and all animal and vegetable life contains the same sixteen elements and even the soil is similarly composed, so that only by the most perverse and unnatural methods of preparing food can the human animal escape being perfectly nour-

ished. It is man's perversion of his natural food supply which, in my judgment, is the cause of 90 per cent of our physical defects.

In the formation of the human embryo the cells must get their building material from the blood of the mother, and the mother's blood must obtain the sixteen life elements from the food she eats. She must get them from her daily dietary, for if this fails to supply the elements necessary, her bones, her teeth and other tissues will be robbed of calcium and other elements to maintain the developing child. Dentists are all familiar with the deterioration of tooth structure during pregnancy, and this is only one of the many unfortunate conditions developing through ignorance of correct diet. The crowns of deciduous teeth are formed when the baby is born and the cusps of the six-year molars are in process of formation. Who made them? The mother, from the food she ate during the prenatal period. Did her food supply perfect building materials for teeth? Not if she consumed the usual American diet of meat, boiled potatoes, white bread, white sugar, pastries, tea and coffee. These common foods are practically calcium free and her child cannot possibly have sound deciduous teeth without calcium and phosphorus. We are trying to stop dental caries at the wrong end. We must get to the source, which is during the prenatal and pre-school life. If you build a house, and put it on a weak foundation, if you substitute inferior materials in the construction of it, you will expect to have a leaky roof, defective plumbing and other troubles. If we try to build a child's body by substituting refined and demineralized products for Nature's food, we can expect the very defects which inevitably develop.

Show me the deciduous teeth of a child and I will tell you the condition of the osseous tissue of that child. The factors which govern the calcification of the teeth also govern the calcification of the bone, and I believe that a defect like carious teeth can never exist as the sole imperfection in an otherwise healthy body. There is not a tissue in the entire body that can be constructed or maintained without the mineral elements in proper physiological balance. The perversion of the physiological balance found in the natural foods can result in an imperfect structure of any organ, including teeth. If there is one message that I can bring you, it is to urge you to consider that imperfect tooth structure does not occur as a single defect, but that it is the index to the structure of the other tissues and organs in the body. This viewpoint places a tremendous responsibility upon the dental profession—it means education of the public not only to insure perfect tooth structure, but a sound and healthy body as well. What must we teach regarding prenatal diet? It can be made so simple that any one can understand it.

The truth about diet should be spread by every dentist whenever opportunity presents. The introduction of courses in dietetics into the public school curriculum will provide the largest field for improving the present conditions. Every girl going through the junior and senior years of high school must have the training in dietetics, especially as applied to prenatal and pre-school feeding, before we will have strong teeth and healthy bodies.

Dr. Percy R. Howe, of Boston, Massachusetts has made some very interesting experiments, having obtained changes in the teeth of guinea pigs by scorbutic feeding. He also obtained similar effects in monkeys. All of the scorbutic animals showed changes in the supporting structures of the teeth, both in the soft tissues and in the bony structure. In some, the mandible was extensively decalcified. Caries were found in the first permanent molars and incisors.

More important than looks is the fact that the teeth are the chewing machine that prepares the food for the stomach. A sound set of teeth masticates the food well, so that it can nourish the body; while an unhealthy mouth and a broken down set mean poor mastication, indigestion, malnutrition and lowered vitality. Many systemic diseases may be traced directly to an unhealthy mouth. Oliver Wendell Holmes said that a child's education logically begins with its grand-parents. Its health and teeth have the same source; proper diet from the prenatal period up through adolescence has much to do with teeth and health.

What, then, are the various steps in keeping the mouth healthy? The first begins with the mother; for a baby's first teeth are almost completely formed by the mother while she is carrying her child. Consequently, during this period, every mother should eat the foods that are the source of tooth-building elements,—calcium, phosphorus and the vitamins. These

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foods are milk and the dairy products; vegetables, especially green, leafy ones; fresh fruits, especially citrous fruits; whole grain breads and coarse, cooked cereals.

Next, a child should be breast fed. A child develops more during the first six months of life than during any other corresponding period. Therefore, it is extremely important that the child have the best food in the world for it—mother's milk. Moreover, natural sucking stimulates the proper growth and development of the jaws and face; whereas artificial feeding tends to restrict this growth.

Every part of the body must be exercised to keep it normal and healthy, and the mouth is no exception. The Eskimo has teeth almost free from tooth decay and has broad, well-developed arches, due to his diet, in which the food has not been demineralized and degerminated, and due to the fact that he chews. In fact, it is said that one of the duties of an Eskimo wife is to chew her husband's shoes to soften them so that he can put them on. We do not need to chew shoes, but we do need to eat sufficient hard, fibrous foods to give the teeth and gums proper exercise.

Historical research expeditions are continually unearthing skeletons thousands of years old which indicate that in the age when man ate more nearly what he should, in the way he should, dental disease was practically unknown.

Remember the first teeth are important—as important as the second. They are needed for chewing, to keep the face in shape and to guide the second teeth into place.

An authority has said that the most important thing that a child does, physically, from birth to twelve years of age, is to manufacture in his jaws forty-eight teeth.

The growth and development of the upper and lower jaws is dependent in a great measure on the growth and eruption of the teeth, both deciduous and permanent. If the deciduous teeth decay, become abscessed, or are lost before the time that they should be shed, it has a disturbing action on the development of the jaw tissues in that locality and in this way we have unsymmetrical development of the bones and misshapen faces.

Again, the premature loss of the deciduous teeth through decay prevents the child from properly crushing his food and using the muscles of mastication which are attached to the lower jar. Although it is harmful to bolt one's food and swallow it without chewing, yet it is more harmful for a child not to use the muscles of mastication, as the development of the cranium or brain case is dependent to a great degree upon the pull of these muscles. The muscles that elevate or close the lower jaws are attached to the bones on the side of the face and cranium and also on the underside of the skull. When we chew our food these muscles pull on these points of attachment and in childhood they help to produce well-shaped heads, jaws and symmetrical faces.

When the pulps in the baby teeth are exposed from decay, they not only cause pain and suffering, but bacteria may be carried through this tissue to the tonsils and the glands of the neck. If the pulps die and the cavities are open, the bacteria can pass up through the root canals and thus gain ingress into the circulation. Many a child has had his little body infected in this manner, and, if he recovered, some organ or organs of the body were weakened throughout life, becoming a source of future trouble. Professor Osler once said that the diseases of which we die in adult life are those which are contracted or made possible in early youth, and clinical observation seems to bear out his conclusion.

If the baby teeth decay the cavities get packed with food and become breeding places for millions of bacteria. Great efforts are made by parents to secure pure milk for their children. By pure milk, we mean that which contains but comparatively few numbers of bacteria of a harmless variety. Yet, if the parents would look into the child's mouth and could only realize the immense number of germs that were present in those decayed teeth, they would know it was useless to hope that the pure milk would reach the child's stomach in a pure state after passing over those decayed teeth. Although the deciduous teeth are lost in early life, yet it is more important to keep them clean and free from cavities during the growing period than is the preservation of the permanent teeth in adult life. Both sets are important; but of the two, a clean and sound set of deciduous teeth performs a more vital influence for the proper development of a growing body than the functioning of the permanent teeth in adult life.

The Exciting or Direct Cause of Caries.

The exciting or direct cause of caries is generally recognized as lactic acid fermentation of carbohydrates, which form plaques on the teeth, causing disintegration of the enamel and dentine.

Decay of the teeth always starts from the outside surfaces, never from the inside. The surfaces that decay most frequently are first, those between the teeth, at the contact points, second, in the fissures or rough surfaces on the tops of the teeth where you chew, and third, close to the gums where food clings to the border of the gums. The enamel of the tooth is made of crystal-like rods and between them is a cementing substance which holds them tightly in place. This can be dissolved by acids, especially by lactic acid which is very easily formed from sugar. When milk becomes sour it is caused by germs decomposing the sugar in the milk, producing lactic acid which gives the milk its sour taste. Starchy foods, if allowed to remain in the mouth, can be changed to sugar by an ingredient in the saliva. The sugar can then be acted upon by the germs in the mouth and changed to lactic acid, so that it can be easily seen that to leave starches and sugars on the teeth for any length of time is to produce lactic acid which can dissolve out the cementing substance between the enamel rods.

As the germs decompose the starches and sugars in the food, and form lactic acid, the acid is held tightly against the tooth under the tent, becoming stronger as more acid is formed. If it remains next to the enamel of the tooth for any length of time it will start to dissolve out the cementing substance between the enamel rods. These little tents are called plaques and they are formed and stay where the friction of chewing food does not displace them.

It is not generally known that the contagious skin diseases also, if contracted during childhood, bear a direct influence on the enamel of the teeth. Many mothers are inclined to look upon the common skin diseases of childhood as something that cannot be avoided, and frequently no effort is made to prevent these diseases, since it is felt that the younger a child is when it contracts the disease, the lighter the attack. Nor, is it known by the layman that the enamel of the teeth is formed from cells similar to the skin cells and that any eruption or rash of the skin is likely to affect that formation of the enamel if it occurs during the period of enamel formation.

Every precaution should be taken to prevent a child from contracting measles, chickenpox, scarlet fever, etc. especially from birth to about fourteen years of age, during which period the enamel of fifty-two teeth is formed.

It is quite common to see teeth with an enamel surface that is pitted or grooved, and in many cases as much as half of the crown of a tooth will be minus any enamel due to some skin disturbance during its formation. Enamel somewhat similar in appearance can also be produced by any severe nutritional disturbance. It is practically impossible to prevent the decay of the defective enamel; therefore, any rash or eruption of the skin should be avoided for this reason.

Three Years' Observation.

Beginning in December, 1924 in the primary grades of our schools, completing the work in February, 1925 in the high schools, 12,967 pupils' mouths were examined and charted by forty members of the Norfolk-Tidewater Dental Society, with the co-operation of the Health Department and the School Board, according to the following report:

There were 12,967 children examined, 48,901 carious teeth, 38,241 which needed filling, 10,660 to be extracted, 2,065 which had been prematurely extracted, 7,062 needing prophylactic treatment.

The total of all defects were 58,028. There were also many cases of malocclusion, which were caused by improper diet and premature extractions, the number of which we have no record.

This shows the percentage of imperfect mouths from seventy-six to one hundred, and average of 93 per cent.

The Remedy

We should have an educational program in our school system, teaching the parents and children the necessity of the proper diet and oral hygiene. Also a dental clinic, adequate to the need of the present day.

As an example, I would like to give you some very interesting data which I have been able to get from Bridgeport, Conn., based on a population of about one hundred thousand

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Summary of Examinations in Norfolk Public Schools by Norfolk Dental Clinic.

SCHOOLS	Number Pupils Examined "T"	Cleaning or Prophy-lactic	Cavities "O"	To be Extracted "X"	Premature Extractions "EX"	Perfect Mouths "P"
John Marshall	496	423	1332	483	3	84
J. E. B. Stuart	979	566	3284	870	451	90
Bay View	197	89	662	216	105	10
Campostella	133	69	460	124	42	6
Boush Street	192	140	560	296	1	7
George Washington	221	154	409	106	31	18
Stonewall Jackson	269	144	691	164	53	21
Villa Heights	92	50	411	250		1
J. B. Hope	234	215	1207	416	7	3
John Goode	291	112	294	706		38
Hemmingway	249	48	453	163		61
W. H. Taylor	574	198	1117	318		89
Patrick Henry	381	231	2599	374	46	26
Robert Gatewood	479	243	917	887		77
Larchmont	317	131	1049	353	111	8
Meadowbrooke	150	72	526		115	13
Chesterfield Heights	148	27	699	109	52	
Ballentine	265	255	1104	273	1	
Henry Clay	407	174	848	374	23	1
Ocean View	439	266	1623	561	108	2
James Monroe	845	209	2285	727	20	49
Robert E. Lee	716	501	1867	325	22	23
Lafayette Annex	469	75	1330	516		47
James Madison	816	541	2258	1151	251	15
Total Grammar Schools	9659	4932	28082	9735	1492	696
Ruffner High School	853	552	2530	302	222	56
Blair High School	817	727	2750	207	52	90
Maury High School	1638	851	4949	353	298	115
Total in High Schools	3308	2130	10229	925	573	261
Total in Grammar Schools	9659	4932	28082	9735	1492	696
Total in All Schools	12967	7062	38241	10660	2065	957

Grand Total of Defects in Grammar Schools 44783
Grand Total of Defects in High Schools 13545
Grand Total of Defects in All Schools 58328

people. Since 1914 the city has established a modern dental clinic.

Their program consists of educating the parents and children in the proper foods and all phases of hygiene. Also tooth brush drills and mouth hygiene. Co-ordination of the class, instruction in diet, with instructions given in the domestic science kitchen. The domestic science course is compulsory for all girls beginning at the sixth grade and is also a promotion requirement. One of the requirements for passing from the fifth to the sixth grade in their public school is to have no unfilled cavities. In the fall of 1922 one hundred per cent passed.

They also show from the death rates, from all causes, they have been able to find records of three diseases which are so common among children: namely, dipththeria, measles, and scarlet fever. These are figured on a basis of per one hundred thousand population and showed the following: Deaths from diphtheria in 1914 were 36.6 per cent and were reduced to 18.7 per cent in 1918. Deaths from measles in 1914 were 20.0 per cent, being reduced in 1918 to 4.1 per cent. In 1914 deaths from scarlet fever showed 14.1 per cent, reduced to 0.5 per cent in 1918.

In 1912 the cost of re-educating retarded pupils in that city was 42 per cent of the entire budget and by 1918 they had reduced it to 17 per cent. This meant a reduction of retardation by 50 per cent, which is a really wonderful change to be accomplished in any school

system in a period of five or six years. Few people have realized the cost in money—which is only one of the evils of retardation—of the re-education of our retarded children. A retarded child is a liability to the tax payer, a burden to the teacher, a hindrance to other pupils and a misfit to society.

One has only to consider the financial side to recognize that any reduction in retardation is an accomplishment devoutly to be sought through all legitimate means.

It is not that systematic examinations of school children provide interesting and valuable statistics; it is not that the defects noted are remediable, but the great truth to be drawn from this record is that the majority of the defects are *preventable* and that their prevention is a matter of persistent education along three definite lines, which seem to be the fundamental basis of general health as well as dental health: (1) proper food; (2) sanitation, and (3) health habits.

What has been accomplished in Bridgeport and other cities can be done in Norfolk.

Gentlemen, the fact that 93 per cent of the children in Norfolk city are in need of dental attention is appalling. The children of today are to be our moral, social and civic leaders of tomorrow. If they are deprived of health and comfort, and afflicted with diseased and unhealthy bodies and minds, we cannot expect them to succeed. The greatest blessing which we can bestow upon them is health and education. It is the duty of every man and woman in our community to give their support and co-operation to this most worthy cause.

In the name of humanity and for the sake of our children, we *must* succeed. I ask you, is there anything of greater importance today? We need *your* support and co-operation. With it, we can succeed in this work. Without it, we are greatly handicapped and have a difficult task before us.

612 *Taylor Building.*

PYELITIS IN PREGNANCY.

By JULIAN L. RAWLS, M. D., F. A. C. S., Norfolk, Va.

With the perfection of the cystoscope and its comparative ease of manipulation we learned that vesical irritation and pyuria were very seldom due to a cystitis but almost always to an initial renal infection. So, for the last few years, our journals have been full of reports of pyelitis, and quite recently there has been a shower of symposiums and sporadic articles on the pyelitis of pregnancy. It is from a rehearsal of these that I have attempted to glean the facts which I wish to present in this paper.

Dr. Holmes, of Chicago, has called attention to the fact that we may be dealing with either a pyelitis *in* pregnancy or a pyelitis *of* pregnancy. He considers the pyelitis *in* pregnancy to be a flare-up of an old recurrent pyelitis to which the patient has acquired a certain amount of immunity; whereas the pyelitis *of* pregnancy is ushered in with an extremely abrupt onset, with marked symptoms, with pain and high temperature, vesical irritation, etc.

Practically all agree that, in most of the cases, the infections are blood borne and that the organism is carried from some distant foci of infection, particularly the tonsils and teeth or the accessory sinuses. The gall-bladder and appendix must be remembered as possible foci.

There is a wide variation in the prognosis given by different writers. Some of them take an exceedingly pessimistic view if the condition occurs in the early months of pregnancy, while others are very optimistic regardless of the period of gestation.

Cary, of Roanoke, writing in the VIRGINIA MEDICAL MONTHLY, reports nineteen cases of pyelitis in pregnancy seen by him in two years, fourteen of which were successfully carried through their pregnancy. Of the five interrupted cases, only one prospective mother apparently suffered from an infection confined to the kidney pelvis alone. He reports two cases in which he used continuous ureteral drainage for six weeks. The catheters were changed once a week and were frequently washed out with a boric acid solution. He believes that if the condition fails to respond to treatment, labor should be induced, particularly if the infection occurs in the early months of pregnancy. He states that "even though the mother goes to term, she is taking a very grave risk with her life, or of irreparable damage to her kidneys." He also thinks that in the early months of pregnancy engorgement of the pelvic vessels closely connected with the uterus may be an exciting cause of pyelitis in a kidney which already has a predisposition to pick up an infection. It is also believed that rotation of the uterus

with the twisting of the ureters would have the same effect in the early months of pregnancy. In the latter months of pregnancy pressure from the enlarged uterus is generally conceded as a probable exciting cause.

Kloman, of Baltimore, speaking before the Southern Medical Association, reported twenty-eight cases of pyelitis in pregnancy seen by him in five years, twenty-one of which responded to therapeutic measures, only seven requiring local treatment.

Dr. Norris W. Vaux, of Philadelphia, in an article read before the American Gynecological Society in May, 1923, states that pyelitis in non-pregnant women is comparatively infrequent as a complication or sequela of other febrile diseases, while in pregnant women it is by no means of infrequent occurrence. He considers that the best results are obtained by symptomatic treatment, and prefers the alkalies to hexamethylenamin. He states that the infection runs a very definite course of from seven to seventeen days and that in a good many cases, although the symptoms entirely disappear, the pyuria and bacilluria persist throughout the pregnancy. He is not particularly enthusiastic for cystoscopic treatment and pelvic lavage. He is exceedingly optimistic as to the prognosis and states that the prospect for the continuation of pregnancy with conservative measures is excellent.

Hunner, of Baltimore, states "an interesting point, of great practical value, is that it is not always necessary to treat a pyelitis of pregnancy until we get entirely rid of the infection. If we dilate the stricture area at ten day intervals until the patient has no further chills and fever, even following the trauma of dilatation, we may cease treatment and give the patient a fairly good prognosis of carrying to term, even though the urine may still show an infection." Incidentally, he states that in thirty-five cases of pyelitis in pregnancy, he found strictures in thirty-four. This incidence, however, has not been reported by other observers.

My own experience has been that it is not necessary to continue treatment until the specimens are clear of pus. Two or three of the cases which I wish to report continued to show large quantities of pus throughout their pregnancy with a complete subsiding of all constitutional symptoms after a lavage of the renal pelvis.

Dr. Charles Norris, of Philadelphia, states that he has never had to empty the uterus for a pyelitis complicating pregnancy. Dr. Floyd Keene states that from 60 to 70 per cent of all acute pyelitis cases will recover under medicinal measures.

Dr. Vaux has called attention to the fact that practically all pregnant women have a residual urine after full attempts to empty the bladder. He states that the residual is usually equal to the amount voided, and he considers this a provocative factor in the etiology of pyelitis.

Dr. John O. Rush, of Mobile, Alabama, writing in *Surgery, Gynecology and Obstetrices* for March, makes a plea for the treatment of pyelitis of pregnancy with an in-dwelling ureteral catheter. He states that the condition is so frequently confined to the right side that he does not catheterize the left ureter if it spurts clear urine in the bladder. His technique is to introduce, if possible, a number 9 X-ray catheter to the right kidney, which is left in place. The nurse is instructed to inspect the catheter every hour, and, if it is not dripping, to inject sterile water through it with a hypodermic syringe. He states that he has left this type of catheter *in situ* for twenty-six days without the formation of urinary deposits.

The symptoms vary from a vague, indefinite discomfort in the back, with some frequency of urination and occasional pus cells in the urine, to sharp attacks of kidney colic, with chills and fever, urine filled with pus and albumin, on to grave toxemia and marked prostration.

Allowing, then, for the natural variant, the man with the contrary complex, the consensus of opinion seems to be that a pyelitis is an incident of pregnancy, grafted usually on a pre-existing kidney lesion, frequently a flare-up of a pyelitis that has occurred before; that the source of infection is some distant focus and that the organism is blood-borne. This organism is frequently a colon bacillus, but both the staphylococci and streptococci have been found. It is also generally conceded that some form of renal pelvic stasis plays an important part, either by stricture of the ureter, or by obstruction to the lower ureter by en-

gorgement of the uterine vessels, or tortion of the uterine cervix, or pressure of fetal parts, or residual urine in the bladder itself.

It is also generally agreed that the prognosis is good and that the condition will respond to conservative therapeutic measures in more than 50 per cent of the cases. These measures should consist of absolute rest in bed, of a very bland diet and the forcing of a large amount of liquids by mouth, by bowel, subcutaneously and, if necessary, intravenously. But Cow has recently called attention to the fact that water possesses more diuretic properties if administered by mouth than when given either under the skin or intravenously. He claims that there seems to be something in the duodenal secretion which acts as a diuretic on the kidney structures. Bearing this in mind, it is possible to give large quantities of water to these patients through a duodenal tube which may be left *in situ*. Apparently, better results are obtained from the alkalies than from hexamethylenamin and sodium acid phosphate, although it is not a bad policy to switch the reaction of the urine every ten or fifteen days, as some of the organisms are facultative. It is too early yet to state what the new kidney antiseptic, hexylresorcinal, will do. The foci of infection should receive proper attention.

If these methods fail, the condition should be treated by the passage of full-size ureteral catheters and renal lavage, preferably with some silver product, rather than the newer antiseptics. Apparently the benefit is obtained more from the passage of the full-size sound than it is from the lavage, since proper drainage seems to be a more important therapeutic measure than the application of a drug, which in the nature of things, must be very fleeting in its contact. If the condition does not improve, an indwelling ureteral catheter or catheters may be resorted to and intermittent or continuous irrigation with some mild antiseptic, such as boric acid or saline, may be tried. The question of a therapeutic abortion is largely a question of personal equation, but we should always remember that it is possible to cause permanent damage to a kidney by a too long attempt to conserve a pregnancy, and I feel that if the pregnancy has advanced sufficiently far to expect a viable baby, we are justified in cutting short our conservative measures.

Within the last three years I have seen about twenty cases of pyelitis that were connected in some way with pregnancy. I saw several of the cases within the first ten days after delivery, and one or two while they were still nursing their babies. The others were seen before delivery.

Only one of these cases was treated entirely by therapeutic measures. But it must be remembered that the majority of them were referred to me for cystoscopic treatment after therapeutic measures had failed, and this takes no account of the number of cases which may have responded to the therapeutic measures instituted by their attending physicians.

I wish to report a few of these cases which exemplify the different types referred to in the body of this paper.

Mrs. I. T. was referred to the office for treatment when four or five months pregnant because of irregular chills accompanied by urinary symptoms. The right kidney specimen showed a large number of pus cells in clumps, the left specimen was negative. She received a double renal lavage and did not require any further cystoscopic treatment until after her delivery, her clinical symptoms clearing up. She was re-cystoscoped on March 7, 1924, several months after her delivery. Her right kidney specimen showed an occasional pus cell. On March 21st her kidney specimens were entirely clear.

Mrs. M. W., a patient of Dr. I. L. Chapman, admitted to the hospital with a double pyelitis when seven months pregnant. She had been under treatment for several weeks at home, without relief. She was given a double renal lavage with silver nitrate and returned home to continue her general treatment. She was delivered later of a living baby without subsequent trouble.

Mrs. E. S., a patient of Dr. I. L. Chapman, admitted to the hospital when five or six months pregnant because of chills, fever and vesical disturbances. The left kidney specimen showed pus cells in clumps and a bacillus, probably colon. She had no further chills after one renal lavage.

Mrs. W. C. P., primipara, first seen on September 11, 1923, when three months pregnant. She was complaining of pain and fre-

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quency of urination. Her specimen showed a three plus albumin and a large number of pus cells. She was treated until December 4, 1923, without very much improvement. At that time she was cystoscoped and subjected to a renal lavage. Although her urine still contained pus cells she went on to a normal delivery on March 13, 1924, without subsequent clinical symptoms.

Mrs. E. P., age seventeen years. This patient was admitted to the hospital on September 11th when about four months pregnant, complaining that for four or five weeks she had had an aching pain, mostly in the back, but at times radiating to the front. She had noticed hematuria twice, once in June and once in July. She had lost about twenty-five pounds in weight in the last four or five months. The bladder specimen showed a three plus albumin, many pus cells, many red blood corpuscles and a motile bacteria. On a cystoscopic examination the right kidney specimen was clear, the left turbid and the field covered with motile bacteria and many pus cells. The stained specimen showed a coccus and a long bacillus, negative for tuberculosis. She was given a renal lavage and sent home. She returned to the hospital on October 7th and her kidneys were again washed out. She had no subsequent trouble.

Mrs. W. P. H., on February 20th, when seven months pregnant, reported to the office with albumin and pus cells in her specimen. As she did not respond to therapeutic measures satisfactorily, she was cystoscoped on March 13th and subjected to a double renal lavage. This also did not improve her condition. On March 28th she was taken to the hospital and labor induced by the introduction of a rubber catheter. She delivered herself spontaneously the following day of a living baby and after her lying-in had no subsequent trouble. Both kidney specimens showed a growth of colon bacillus.

Mrs. H. K. T. came to the office when six and a half months pregnant complaining of frequency of urination with pain. She had one plus albumin and a large number of pus cells in her specimen. She was put to bed on a bland diet with forced fluids, etc. She was kept in bed for about ten days, when her symptoms had all disappeared and her urine was entirely clear. She was delivered on September 29th without further trouble. This is the only case of the entire series that was treated entirely by therapeutic measures.

Mrs. R. P. was taken six days ago with a rather sharp pain in her back; later the pain became aching in character. This pain was low down in the lumbar region and did not radiate up or down. She had had some burning and frequency of urination since the attack started. The physical examination showed considerable tenderness on pressure over the right kidney region. She was about six months pregnant. Cystoscopic report: There was a slight congestion of the bladder, but no intolerance to fluid. Both ureters catheterized easily. Left catheter began discharging a clear urine at once; right catheter was dry. Suction to that catheter resulted in twenty c.c. of cloudy urine. Then the catheter ran clear for several minutes until it again became plugged. Phthalein returned from the left side in eight minutes; none had appeared on the right side at the end of fifteen minutes. The right kidney specimen showed a field covered with pus cells and motile bacilli; the left kidney specimen, a few pus cells and motile bacilli. All kidney soreness had disappeared at the end of thirty-six hours and she went on to term without subsequent trouble.

Mrs. A. A. was admitted to the hospital on November 12th with an acute toxemia of pregnancy. She was vomiting incessantly. Her specimen showed a three plus albumin and a field covered with pus cells. She was saturated with normal saline, subcutaneously, and given sodium bicarbonate and glucose per rectum. Her nausea and vomiting stopped and her general condition improved. She was cystoscoped and subjected to a double renal lavage with 1 per cent silver nitrate. She was discharged on November 19, 1924, and although her specimens were full of pus until after her delivery, she showed no further clinical symptoms of toxemia and was delivered on March 7, 1925. During her second admission to the hospital her specimen still showed a two plus albumin and a large number of pus cells, but her highest temperature was recorded as 99.4 degrees F.

Mrs. A. Z. was admitted to the hospital on the service of Dr. E. R. Altizer. She was having frequent attacks of left-sided renal colic,

requiring morphia to relieve her. She was pregnant about term. She delivered herself spontaneously three days later. Her bladder specimen showed a four plus albumin, many pus cells, some in clumps. An X-ray of her kidneys and ureters was negative for calculi. On cystoscopic examination she proved to have a stricture of her left ureter, which was fairly easy to dilate. She was cystoscoped three times and her attacks of colic disappeared. The last urinalysis showed both kidney specimens entirely clear.

Mrs. A. H. This girl was admitted to the hospital on January 8, 1925, for threatened eclampsia. She had a four plus albumin in her urine and her field was covered with pus cells. She was unable to see, and she was having muscular twitching and other evidences of acute toxemia. The induction of labor was begun and she was delivered the following day by Dr. I. L. Chapman. Nine days later she had a temperature of 102.6 degrees F. and the next day it was 103 degrees F. She was cystoscoped on the 20th and 24th. The first lavage was with silver nitrate, the second with mercurochrome. She was discharged on January 26th with a normal temperature. She was readmitted on February 2nd with a temperature of 103 degrees F. and was cystoscoped and a pelvic lavage given on the 2nd, 6th and 9th. Her temperature was normal after the 6th and she was discharged on the 10th. She has had no further clinical symptoms.

Mrs. M. J. This case is reported because it was originally treated as a pyelitis complicating pregnancy. and because of her rather interesting history. Her mother states that when about three years old she had attacks of passing blood from her kidneys, without any other symptoms. This continued at irregular intervals. When she was fourteen years old she had a very thorough urological examination consisting of X-ray and cystoscopic studies. The conclusion at that time was that she had an infection, probably a pyelitis, of the right kidney. I first saw her on October 15, 1924. She was nineteen years old and seven months pregnant. Her bladder specimen was full of pus and she was having irregular chills and fever. The left kidney specimen consisted of clear urine, the right nearly all pus. A white blood count was 14,800, polys 87 per cent. She had a right renal lavage of 1 per cent silver nitrate on October 15th, 21st and 31st, with very little improvement in her condition. On November 16th she was admitted to the hospital for the induction of labor. A bag was introduced and when it was expelled the cord became prolapsed. As soon as this accident was discovered she was anesthetized and the baby delivered, but it could not be resuscitated. Before she left the hospital an attempt was made to make a pyelogram of the right kidney, but the plate showed all the bromide in the bladder. On February 18, 1925, she was readmitted to the hospital. At that time she had a total phthalein of 40 per cent and 20 per cent for the two hours. Her left kidney specimen was clear. No specimen was obtained from the right side, because the catheters continually became blocked with pus. The bladder specimen was nearly half full of pus. The kidney was removed on February 20, 1925. She proved to have a displaced kidney lying just across the brim of the pelvis, with a very short, wide-open ureter which accounted for our inability to make a pyelogram. It also probably accounts for her comparative freedom from serious systemic damage during the length of time she had harbored this pyonephrotic kidney. On section the kidney was found filled with greenish pus, with several soft flat stones. These stones had not shown on X-ray.

She left the hospital on March 3, 1925, with her specimen practically clear. She has put on considerable weight since her operation and is apparently entirely well.

708 *Medical Arts Building.*

DIABETES AND THE GENERAL PRACTITIONER.*

By W. P. JACKSON, M. D., Roanoke, Va.

From Joslin's observation that there are in the United States alone about one million diabetics, and the report of the Metropolitan Life Insurance Company that the mortality from diabetes dropped 11.4 per cent during the past year, attention is at once brought to the tremendous part the treatment of diabetes plays in general medicine.

One of the greatest advances in recent years in this treatment is the establishment of a clear rational basis for proper diet adjustment.

*Read before the Walter Reed Medical Society, Williamsburg, Virginia, May 28, 1925.

The first of these principles is that of total dietary restriction to keep the bodily metabolism at a minimum. The next is protein restriction. Proteins cause a greater stimulation of metabolism than either of the other foods, hence they should be given in quantities sufficient only to prevent use of the body proteins. The third principle is the relation of carbohydrates to fats.

Too much carbohydrate restriction causes acidosis by incomplete fatty acid metabolism. The minimal point of this restriction has been given us by Woodyatt and Shaffer. The idea is that the combustion of one molecule of glucose will cause the combustion of one molecule of fatty acid. Less glucose than that results in acidosis. The molecular weight of glucose is 180 and that of fatty acid is 270. Reducing that to simple terms, a diet containing as the end products of metabolism one gram of glucose for every gram and a half of fatty acid will prevent this acidosis. In practice this will nearly always work.

Proteins are split up in 58 per cent glucose and 46 per cent fatty acid. Fats are converted into 10 per cent glucose and 90 per cent fatty acid while all of the carbohydrates are converted into glucose. From this we can readily calculate the food composition and fuel value of a known diet. The minimum of protein allowed should be about 2/3 to 1 gram per kilo of body weight, and for a person taking moderate exercise this seldom exceeds seventy grams for the twenty-four hours. Growing children may require three to four grams per kilo, especially if they are undernourished. The number of calories needed by the individual will vary from 1,500 to 3,000 per day depending on the patient's age, size, and activity. Children, of course, will require less and laborers more than those figures. With the amount of protein designated and the number of calories required by the patient the amounts of carbohydrates and fats will be determined when this 1½ to 1 ratio is kept. If a patient develop acidosis without excreting sugar on a diet such as that, it is almost a certainty that he is not getting enough food and is drawing on his own body fat with an upset of this ratio. For a person weighing 110 pounds, or 50 kilos, and requiring 1,500 calories, a diet to fulfill these requirements will be about C-50 gm., P-50 gm., and F-120 gm. For a person weighing 154 pounds, or 70 kilos, and requiring 2,600 calories, the diet needed will be C-86 gm., P-72 gm., and F-200 gm. For a child five years old weighing 44 pounds, or 20 kilos, the diet will be about C-30 gm., P-40 gm., and F-83 gm. (Samples of diets cannot be given here because of lack of time and impracticability.) There are numbers of good diets in Joslin's Manual and with these and the available food as a guide for the patient many valuable suggestions may be gotten.

In some severe cases with large doses of insulin required to keep them sugar free, it may be wise to try to substitute glycerin for at least a part of the carbohydrate, allowing about 3 grams of glycerin for each gram of carbohydrate substituted. Ten to 20 grams may thus be replaced by the glycerin. This glycerin can be given in coffee or with cream and is not considered very bad to take. There may be an occasional patient who will show some gastro-intestinal upset from it and in those cases it may have to be discontinued. The fuel value of glycerin is 4.3 calories per gram as compared with carbohydrates 4.1 per gram. Glycerin is split up into 40 per cent carbohydrate and the remaining 60 per cent is presumably utilized as a non-carbohydrate antiketogenic substance, so that by this substitution a food of slightly higher fuel value is given and it allows a higher fat metabolism with less insulin. We are at present using this on two patients. One, a lady who came to us about five months ago with a history of progressive loss of weight and strength and marked thirst. Her urine had considerable sugar and acetone. We put her on a maintenance diet with about 60 units of insulin a day. On this regime she did well and remained sugar free for about three months. Two months ago a blood sugar test showed 140 mgm. per 100 c.c. of blood, and we raised her insulin dosage slightly. A few weeks later she came back reporting sugar and acetone present at 11:00 A. M. each day. She was free the remainder of the day. Then we began giving her large doses of insulin before breakfast and four doses a day till finally she required 95 units a day with a very strict diet to keep her sugar free. With that condition we decided to use glycerin, and now she is taking one ounce a day with about 10 grams of carbohydrate substituted and a diet

of C-55 gm., P-69 gm., and F-165 gm. With that change, her insulin has been dropped to 83 units a day. She continues sugar and acetone free and has gained about two pounds in weight. She said she felt better the very first day she started using the glycerine. The other case is also taking large doses of insulin and we have started him on glycerin. He takes it well with no complaint and has been able to reduce his insulin some. The exact amount of reduction I am not able to say because of his inability to keep an exact record.

The introduction of insulin by Banting and his associates changed the old picture of gloom and despair to an atmosphere of brightness and one full of hope. In nearly all cases it carries with it the assurance to the patient that he can go back to his former occupation, eat sufficient food to keep him properly nourished, and allow him to continue as a normal citizen, except that he must always adhere to the proper dietary restrictions, with insulin if necessary. Banting estimates that about 80 per cent of diabetics will do well without insulin and I believe he is approximately correct. Harris states that in his series about 40 per cent require no insulin. In our own series we find about the same as Harris reports. These latter figures are lower than Banting's estimation, and I think the reason is that many diabetics are discovered by their family physicians and by simple dietary restrictions are kept sugar free and thus never require more vigorous treatment.

What has been said so far refers only to the simple uncomplicated cases. The treatment of complications at times taxes our every effort and resource. Coma is one of these complications. Many times diabetics are first seen in coma. The question then is one of diagnosis. The air hunger and fruity odour of acetone on the breath will be a helpful guide, but the examination of the urine, which will probably have to be obtained by catheterization, showing the strong reaction for sugar and acetone, will confirm the diagnosis. This condition demands immediate and vigorous treatment. One case may illustrate: About four weeks ago one of my colleagues was called to see a patient in a comatose condition. After much trouble in getting a history he learned that I had previously treated her for diabetes and he then called me. I had treated her previously, but in spite of all my efforts to get her to come in and have her condition checked up, she had refused and had eaten anything she wanted and taken no insulin during the past year. I went immediately to her home and when I arrived I found her lying in bed in coma. The acetone odour was noticed immediately on entering the room. Her breath was rapid and deep and her tissues were somewhat desiccated. I gave her 25 units of insulin intravenously and sent her to the hospital. The first thing we did on her arrival at the hospital was to give her a glass of orange juice with a little sugar added. Fortunately she could be aroused sufficiently to swallow fluids. Next we got a catheterized specimen of her urine which showed a strong reaction for both sugar and acetone. A blood sugar test showed 1,000 mgm. of sugar to 100 c.c. of blood. Twenty-five more units of insulin were given about two hours after the first dose. She was next given an enema which was followed by as much water per rectum as she would absorb, and as much fluid was forced by mouth as she could be made to swallow. In six hours, after having taken 80 units of insulin, she would answer questions intelligently and was well oriented. In twenty-four hours she apparently was perfectly rational and the acetone reaction was slightly positive, though the sugar test was strongly positive and her blood sugar was 277 mgm. per 100 c.c. She had taken 185 units of insulin. During the first day she was in the hospital her pulse was rapid and weak, showing the marked strain of this condition on the circulation. After consciousness was restored she ran a slight fever and complained of some pain in her right ear. Examination showed a furuncle in the ear. Leucocyte count was 14,100. This slight infection, I feel sure, is what precipitated the coma, but she told me afterwards that in the previous few weeks she had noticed a great increase in thirst. Her course after that was uneventful.

Another case we had in the past few months had been in coma about twenty-four hours, a much longer time than this previous case, and he required 300 units of insulin and thirty-six hours to restore consciousness. His blood sugar on entrance to the hospital was 1,600 mgm. per 100 c.c. When consciousness was restored his blood sugar was still high, 1,428 mgm. per 100 c.c. Urine sugar was strongly

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positive and acetone negative. I want to emphasize the importance of early treatment because with much delay there seems to be some damage to the kidneys which may result fatally even though the acidosis is overcome.

The next complication I want to speak of is gangrene. Joslin stresses the extreme importance of this in association with diabetes, and personal experience with a few cases gives one a lasting impression. I dread it more than coma. These patients usually are elderly, with sclerotic changes in their arteries, and are naturally bad risks. The dry gangrene can usually be treated expectantly, but the moist gangrene requires heroic treatment. There is often a great deal of pain in these cases and the pain may well be sufficient cause for amputation. The last case we had gave me some valuable lessons. She was a maiden lady about seventy-five years old. Her blood pressure was slightly elevated and she had had diabetes for several years. Gangrene involved parts of all the toes of the right foot and the foot, extending up about two inches above the toes. Her pain was largely in the great toe where there was a slight amount of moist gangrene under the nail. We tried to treat her medically and had little trouble in getting rid of her sugar, but the foot would not heal, though at times it appeared much improved and we were thus encouraged to continue the medical treatment. Finally we persuaded her to have the great toe removed. This was done, yet she did not improve, in spite of the fact that her diabetes was well under control. About two weeks later, after having had considerable pain in that foot, she died. Now if that foot had been amputated in the beginning, she at least would have been relieved of a great deal of suffering and might have lived a little longer, though she was old and showing degenerative changes.

Infections also are much more serious when associated with diabetes and, as pointed out above, may very easily precipitate coma. They cause a marked disturbance of the metabolism and the patients are apparently much more resistant to the action of insulin. Their glucose tolerance as well as their degree of intoxication and appetite are so variable that the usual actions of insulin are not always seen, and under these conditions multiple small doses sufficient to combat the acidosis, rather than the glycosuria, will give best results. Or in some cases where their appetites vary so much, it may be advisable to give the insulin after the nourishment has been taken.

In diabetes complicated by surgical conditions we advise clearing up the glycosuria and acidosis before operation, if surgery is not urgent, but in acute surgical conditions to delay is fatal, though we try to feed the patient to within at least three hours of the operation, and a short time before giving the anaesthetic, give a moderate dose of insulin to combat any tendency to acidosis that may develop. Immediately following the operation fluids are forced, and glucose and insulin are given intravenously, when necessary, very much as if the patient were in coma, but less vigorously. Ethylene we consider the safest general anesthetic.

A word might be said here about alkaline therapy in diabetes. For a considerable time previous to insulin, sodium bicarbonate was given in large doses and even to the present time most clinicians advocate its use in acidosis. Joslin on the other hand feels that it has no place in the treatment of diabetes. Recent observations tend to prove Joslin right. Overdoses of it may precipitate tetany, as proven by Harrop. Again, its constant use tends to promote the constant excretion of acid substances. It has recently been shown that the disturbances of carbohydrate metabolism caused by large doses of bicarbonate may be so like that of diabetes that the condition may be made worse by it, and that fat metabolism in the presence of alkalies and absence of carbohydrates is definitely inhibited. Our cases of coma have yielded to treatment without alkali.

I would like especially to emphasize excess fat as playing a very important part in the production of this disease. In our last series of fifty cases, twenty-two of them were obese and over 50 per cent of these required only an adjustment of their diets to reduce their weight to normal and successfully control their diabetes. They thus show, as is usually the case, that diabetes is mild in obesity. Recently we had a patient who was sent to us with the history of having been over-fat for several years, and during the past few months began excreting sugar. Her blood pressure was a little high. She weighed 308 pounds and it was almost impossible for her to get around.

I disregarded the sugar and put her on a fat reducing diet, and with this diet she has lost forty-three pounds in the past two months. Incidentally she has had no more trouble with her glycosuria and feels better than she has felt in years.

Instruction of these patients, I think, is of the utmost importance—as much as their time and intelligence will permit. Certain fundamental principles are absolutely necessary, such as the relation of the amount of insulin to the carbohydrates. They must be impressed that these two factors should always vary in direct proportion so that any possible hypoglycemic reaction may be avoided. They should be instructed to weigh their own food, certainly in severe cases, because guesses, such as the size of a small slice of bread, will lead to wide variations from a prescribed diet. While this is very essential in the severe cases, the great majority of them can do without this weighing by taking a diet expressed in quantities measured in household utensils, particularly if they choose their diets from foods low in carbohydrates. A weekly weight record should be kept and they should be encouraged to keep their weight certainly not above normal. If possible they should learn the composition and fuel value of the common foods. Some of Joslin's little cards contain practically all that information. Those little cards, and particularly his latest manual for diabetics, are of great value, enabling these patients to manage their diets most successfully. I recommend that they all have a copy of this book. With this knowledge they can very easily vary their diet from day to day and much more readily satisfy their appetites. They certainly should be taught to test their own urine for sugar and acetone. This part of the treatment will consume much time, but it will amply repay by getting far better results and will make the work much more interesting to the physician.

When insulin first began to be used much hope was expressed that it might give the pancreas physiological rest and thus restore at least a part of its function. Recent work from the University of Toronto, while not conclusive, at least gives some hope that this actually may be true. They report regenerative changes in the islands of Langerhans in a well-treated case that came to autopsy through accidental death. With this information, as well as the observations of several clinicians, that the dosage of insulin can be reduced in some cases after a period of good treatment, we are spurred on to a more vigorous and more hopeful campaign of treatment.

In conclusion, I want to emphasize a few special points; the first of these is the necessity for all of us to be prepared to recognize and diagnose diabetic coma and to institute vigorous treatment immediately; second, take time to instruct them in the essentials of their disease and how it is treated. If you are too busy to do it, as no doubt many of you are, then send them to some one who has the time; third, don't forget to emphasize to them the importance of their personal hygiene. Abrasions and cuts should be attended to promptly and thoroughly, and "any diabetic over fifty years of age may well bathe his feet as carefully as his face if he wishes to avoid gangrene;" fourth, have a follow-up system by which the patients either report to you in person at least once a month, or write, because they constantly have to be encouraged and reminded of the importance of always adhering to the principles of the treatment as laid down. It is mighty easy for them to get discouraged and forego treatment with disastrous results; fifth, we can now offer them some hope, though it be small, that by vigorous adherence to treatment their disease may be at least partially cured.

I know of no disease that requires more study and hard work than this one, in its successful treatment, but it will give large remuneration, may be not so much financially, but rich in grateful patients.

Jefferson Hospital.

THE TREATMENT OF NAUSEA OF PREGNANCY.*

By M. PIERCE RUCKER, M. D., Richmond, Va.

There are almost as many treatments for the nausea of pregnancy as there are obstetricians. The reason for this, of course, lies in our very vague ideas as to its etiology. By some it is regarded as a neurosis; by some as a manifestation of anaphylaxis; by some as an endocrine disturbance; by some as a toxemia; and by some as a mixture of neurosis and toxemia.[1] Those who hold to the first hypothesis give as the reason for their belief the

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fact that hyperemesis is sometimes relieved with startling suddenness by procedures that could have no possible benefit except in the way of suggestion. By the same line of reasoning, the prompt relief of symptoms and gain in weight that has been known to follow an exploratory laparotomy would prove that carcinoma of the stomach is an hysterical manifestation.

Until some one clears up the question of etiology our treatment must necessarily be empiric.* From a therapeutic standpoint one may divide the cases into two groups:

(1) Mild or ambulatory and (2) severe or hospital cases.

The prompt and efficient treatment of group one will largely obliterate group two. It is in group one that the greatest neglect occurs. There is a widespread belief that nausea and vomiting is a necessary evil in pregnancy and that so long as the patient does not lose too much weight or develop signs of acidosis nothing need be done for her When Hirst's[2] article, recommending corpus luteum for these patients, appeared in 1916, I began using it with a great deal of success, so much so that since then I have not had to produce a therapeutic abortion except in late cases seen in consultation. These patients came to the office once or twice a day for the hypodermic injection and the treatment was troublesome both to the patient and to the office nurse.

In the fall of 1923 I had occasion to treat a few pregnant patients for leucorrhoea, and was surprised to see their nausea disappear. Since then I have noted that these vomiting patients have large boggy, conjested cervices. I have had several patients who were not pregnant but, who had morning sickness, with the same sort of cervix. I treated them the same way. As the condition of the cervix improved the nausea disappeared. Since then I have treated nausea of pregnancy simply and solely by painting the cervix inside and out, with a 2 per cent mercurochrome scolution. The treatment is given every other day until relieved, and begun again at any sign of relapse. The improvement begins usually within the first week. In out-of-town cases I have recommended vaginal suppositories of 2 per cent mercurochrome, but I do not believe they are as efficient as painting the cervix under the guidance of the eye. The only exception to this mode of treatment has been two patients with incarcerated retrodisplaced uteri. In these cases the vomiting ceased when the malposition was corrected, which was done under ethylene anesthesia.

I recognize that in discussing the treatment of so variable a condition as the vomiting of pregnancy, one is apt to be misled by overenthusiasm, and that the personal equation enters into the treatment very largely. We saw this in the corpus luteum treatment. Some were very enthusiastic over the results, and others saw no benefit whatever. I must confess that my results with it were very satisfactory, although occasionally I got a tender indurated area at the site of injection that persisted for several weeks. There are two facts that convince me that there is merit in the treatment with mercurochrome. First, none of these patients in the past two and a half years has gotten into class two, and second, the patients return for their treatments regularly on the appointed days.

The idea that the seat of the trouble lies in the cervix uteri is not new. I have heard it stated that Marion Sims was wont to paint the cervix with silver nitrate for this condition, but I have been unable to find any mention of it in his published works. However, I found in the *Virginia Medical Journal* for 1858 an extract of a case reported by Dr. Parks[3] before the Boston Society for Medical Improvement. "Dr. Parks remarked that he gave the following abstract in consequence of a somewhat similar case reported by Dr. Churchill in the Dublin Quarterly for August last, and which was stated to be, as far as Dr. Churchill knew, the first instance in which nausea of pregnancy had been treated by applications to the cervix uteri." Dr. Parks' case had an erosion of the cervix which he treated with silver nitrate. One application greatly relieved the patient.

Class two, or the severe cases are preferably treated in a hospital. The treatment consists of isolation, some form of glucose therapy, either in the form of a proctoclysis with a 5 per cent solution or, in the very severe cases, intravenously. Titus[4] recommends giving seventy-five grams in a 25 per cent solution as the first dose, and fifty grams at subsequent

*DeLee, in discussing this subject at the recent meeting of the American Medical Association, said that in some cases where there was some demonstrable nasal infection, relief by the hyperemesis followed treatment of the nasal condition.

doses. He does not think that the use of insulin adds anything to this treatment. Thalhimer,[5] on the other hand, believes that the patient clears up more quickly when insulin is given hypodermically at the same time the glucose is given intravenously. He gives one unit of insulin to every three grams of glucose, and gives the glucose in a 10 per cent solution injected slowly into the veins. The patient should be kept under the influence of large doses of bromide, thirty to sixty grs. by bowel. Nourishment should be supplied either by rectal or duodenal feeding. When gastric feeding is resumed the food should be as dry as possible. Recently Lehman and Gibson[6] have recommended 2 per cent solution of sodium chloride in post-operative vomiting. In several cases of hyperemesis gravidarum I was able to give this when the patient promptly vomited plain water. Should no improvement follow this treatment, a therapeutic abortion must be considered. The mistake is often made of delaying the abortion too long.

Conclusions

Vomiting of pregnancy is associated with increased conjestion of the cervix. Treatment of the cervical condition relieves the nausea.

One often sees the same type of nausea in women when they have large, congested cervices. This same treatment relieves their nausea also.

Treatment of the mild cases and the early cases lessens the number of cases of the more severe type.

The severe type demands energetic hospital treatment, so as to avoid therapeutic abortion.

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THE FOOD WE EAT: DISEASES RESULTING THEREFROM: RECTIFICATION.*

By FRANK HANCOCK, M. D., Norfolk, Va.

As with every new subject which makes its bid in scientific investigation with certain principles seeming to revolutionize previous conceptions, nutrition is now called upon to explain most of the deficiencies of the human system. It seems fairly able to do so. The effects produced by the absence of vitamins are characteristic and specific for each vitamin. In every case the administration of the missing vitamin relieves the specific condition with a certainty and a rapidity which is one of the most striking and unique phenomena in medicine.

I shall begin with the orthodox trinity, the fat, and two water soluble vitamins. In a deficiency of the first of these we have a failure of processes of growth; greatly reduced resistance to infectious diseases; failure in bone cartilage and tooth development and in calcium metabolism; a tendency to oedema; and lastly, a failure of corneal nutrition. Cellular activity is minimized and out of this reduction comes an increased susceptibility to infection that hastens the end of the experiment—in the case of experimentation with vitamin A. When vitamin A is no longer needed in growth processes, it goes to the glandular elements where cell increase takes such tremendous impetus; sexual power is established; nervous, respiratory and digestive functions become stabilized by a sufficient glandular activity. Pluriglandular deficiency is both of substance and secretion.

A continued absence of water soluble B results in beriberi. Water soluble C deficiency is followed by a swelling and tenderness of the joints; spongy and bleeding gums and loose teeth; swelling and fracture of the ribs.

We will consider the supplementary substances, the mineral salts. J. Boyd Orr believes that in the case of most minerals, both absorption from the intestines and excretion by the kidneys are influenced by the amounts of other minerals present. Hart and Steenback demonstrated that an excess of magnesium interfered with a utilization of calcium, while calcium and phosphorus were mutually dependent upon each other. This is illustrated in rickets, where the two minerals fall together

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and rise in blood content as the disease recedes—and just in proportion as it recedes. Calcium in other instances performs a similar duality with iron. Without phosphorus all the other food elements are useless. The fertilizer manufacturer is required to state precisely the available amount of phosphorus in his product, but not so the food manufacturer. There is no such balance as this to be obtained, except in Nature's laboratory—that is natural foods neither cooked nor canned (such canning processes as generally obtain today).

Bayliss has shown that catalysts (effecting chemical changes without themselves being effected), *found in natural foods*, are essential to the proper utilization of the mineral salts and also the fats, carbohydrates and proteins. Enzymes produced by friendly bacteria appear to be included in this category. The oxidizing property of sulphuric acid is well known. When this acid is generated in the human body, as it is constantly generated, it is at once neutralized by the alkaline bases which Nature provides for that purpose. Phosphoric acid is generated and neutralized in the same way. Calcium, magnesium and potassium are among those alkaline bases. A few drops of sulphuric acid taken into the body, from a bottle, will produce death by oxidation and destruction of the tissues. When food from which the minerals have been removed by commercial processes, or by cooking, is introduced into the body, free sulphuric acid forms from the albuminoid sulphur, and free phosphoric acid from the many complex phosphorus compounds found normally in meat, cheese, and eggs. These acids, when properly neutralized, appear in the urine as discarded waste products, sulphates and phosphates. When the neutralizing bases have been removed from food before it is consumed, these acids abstract basic elements from living tissues, injuring and destroying them; the alkalinity of the blood is lessened, its power to carry carbon dioxid to the lungs is impaired, the kidneys fail to excrete acid phosphate, and there is an acidosis.

Meat minced and immersed for a few hours in distilled water losses its potassium, magnesium and calcium salts. It becomes colorless, and when cooked is tasteless. If fed to dogs or other animals they will eat it reluctantly, and will die sooner than control animals not fed on anything. Their reserve vitality is used up at a rapid rate through the efforts of their organs to neutralize the sulphuric and phosphoric acids and to throw off the useless and dangerous food elements imposed on them, whereas the animal starved outright dies no faster than the laws of starvation demand. In the case of refined foods, minerals are carried out of the body in life's processes faster than they are taken in. This is particularly true in tuberculosis and other wasting diseases in which the calcium content of the feces exceeds that of the food consumed. It was true of the thousands of children who died last year under ten years of age in the United States.

For a moment I wish to speak of chlorophyl, the hemoglobin of the plant upon which all life depends, manufactured as you know by the vegetable kingdom only in response to the rays of the sun. Prof. Arthur Thompson, experimenting with rats, showed that when kept upon a deficient food they would not exhibit rickets if fed upon the meat of other rats that had been rayed with ultra-violet light. So a food ration deficient in rickets-preventing vitamin, if exposed to ultra-violet rays, becomes adequate and sufficient for a time at least, delaying the fatal issue. This is to show the value in plants and animals of sunlight, transplanted by ultra-violet lamps. Thus ultra-violet light acts prophylactically and curatively.

Mineral salts are electrolytes; colloids have an electrical discharge; enzymes are colloids. All of these agencies—mineral salts, catalysts, enzymes, chlorophyls, violet rays and electricity—are either destroyed by heat, or so altered as to be no longer recognizable as Nature's products—ceasing to operate as our reinforcements, they become our enemies. Leonard Williams, an English scientist, therefore declares that all disease, microbic and metabolic, *is a function of cookery;* and that without the essential representation of raw fruit and vegetables the human race will perish under civilization. It seems to be on the way.

I wish now to discuss the observations and scientific discoveries of Lieut. Col. Robert McCarrison, the English Army Surgeon and scientist, who has spent the last decade among a tribe of primitive people in northern India. He noticed that they had very few, if any, of the civilizational diseases so common among us—appendicitis, cholecystitis, gastro-intestinal

diseases, tuberculosis, colitis, renal and heart diseases, cancer. A long series of experiments upon monkeys leading their wild lives in the Madras jungles, fed with vitamin deficient diets, enabled him to demonstrate that the first effect of food deficient in vitamins was to render the intestinal tract susceptible to invasion by bacterial or protozoal agents. In due time the monkeys he was experimenting on died, or were killed as they were about to die, and the following gross anatomical lesions were found: enlargement of the mesenteric glands; dilatation of the stomach; congestion of the gastro-intestinal tract, with ecchymoses scattered over the peritoneal surfaces—most commonly over the colon; ballooning of various parts of the tract; marked thinning of the muscular walls of the colon, and partial disappearance of its longitudinal bands. Opening the tracts, post mortem ecchymoses and congestion of the stomach were seen, especially around the pylorus; shallow ulcers, shallow down-growths of the epithelium, suggestive of commencing carcinoma of the pyloric region. In the colon there were varying degrees of colitis, sometimes involving the whole viscus. *Colitis was the most marked, and one of the most constant of the morbid anatomical changes present.*

The post mortem findings in the case of the recent President Ebert, of Germany, are in singular accordance with this description. Histologically there was congestion, hemorrhage and atrophy of the muscular coats of the bowel; degenerative changes in the plexus of Auerbach; atrophic, necrotic and inflammatory changes in the mucous membrane of the entire tract, but especially in the colon; *bacterial invasion* of the bowel walls, opening of the portals of entry into the blood stream, and pronounced atrophy of the lymphoid elements of the intestinal mucosa—exactly what happens in marasmus. These changes were practically present in all these animals, but more pronounced in those whose deficiencies of diet included both A and B vitamins.

McCarrison concludes then that vitamin deficiencies in humans result in intestinal stasis; infection of the tract; chronic digestive disturbances with impaired absorption and assimilation of food; mucous disease in children and colitis in adults.

I wish to offer this picture from an article by Cramer (*Lancet*), which shows bacteria penetrating between two villi at the lower end of the ileum, where the intestinal mucous membrane has atrophied following vitamin A deficiency. They have entered the remotest recesses of Lieberkuehn's crypts. The mucous glands of the cecum have been similarly penetrated. Radium effects the intestines in the same way, only more quickly. The atrophic and necrotic changes affecting the villi, and the resulting invasion of bacteria, are due to a decreased secretion of mucus with atrophy of the mucous cells. In a normally functioning intestine the bacterial and protozoal flora is confined to the center of the intestine, owing to the protective action of the mucus. Mucus probably plays a bio-chemical as well as a mechanical part in the protection of mucous membrane against infection. When the mucus secreting cells become impaired by the absence from the diet of vitamin A, the bacteria and protozoa can be seen to attach themselves to the surface of the villi, to creep down between them into the crypts and to proliferate there. Restoration of vitamin A quickly restores this alteration of the tissues. Daniels, Armstrong and Hutton emphasize the fact that the lack of vitamin A is the specific factor in the development of another disorder which they term para-nasal and mastoid sinusitis-bacterial invasion is permitted.

Dr. Cramer found that the digestion of fats was less complete and rapid in the absence of vitamins from the food, and that the vitamins—especially B—had a definitely stimulant action on the processes of intestinal digestion and absorption.

Investigations by Gross, using synthetic diets deficient in vitamin B, have shown *in vivo* and *in vitro* definite impairment of the motor functions of the entire intestinal tract, and Pappenheimer and Larrimore showed that *gastric lesions* occurred in fifty-five per cent of rats fed on a synthetic diet in which the only deficiency was vitamin A. They found that cod liver oil afforded complete protection against those gastric lesions—no gastrectomies, nor anastomoses were necessary. These authors' rats demonstrated exactly the lesions shown in Fibiger's rats *fed only on white bread.* Vitamin deficiency of lesser degree continued for long periods might cause effects similar to those of greater degree of this deficiency for a shorter time. For instance, many of these cases of mal-nutrition never

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reach the terminal stages of beriberi, pellagra or scurvy, but show intermediate stages of nutritional conditions of obscure ill health, so little obvious that they have been overlooked.

W. Cramer, in a long discussion of McCarrison's pioneer work, believed that it would remain, as it is now, incontestable. Cramer believes, and I think this is fairly epochal, that there is no fundamental distinction between specific and non-specific impairments of health due to vitamin deficiency. The so-called specific deficiency diseases are merely the last links in the chain of events, of which the non-specific impairments are the earlier ones; caries of the teeth, osteomalacia, stomach and duodenal ulcers, appendicitis, etc. When vitamins are withheld, the health of the organism at once declines. There is a loss of appetite, constipation, a fall of bodily temperature, a diminished nitrogen retention, an impaired absorption of food, and a progressive atrophy of lymphoid tissue. All of these particular disturbances are specifically remedied by the administration of vitamin B. Vitamin B then has a drug-like specific stimulating action on the functions of the digestive tract. There is an absence of spontaneous infections in vitamin B deficiency, though there may be a complete marasmus.

Vitamin A deficiency is universally accompanied by a disposition to spontaneous infections, commencing in the mucous membranes of the intestinal and respiratory tracts, and in the eye. They are due to a weakening of the local defenses of these tissues represented by the mucus and the tears.

The general humeral defenses of the monkeys experimented on by McCarrison remained unimpaired until long after the local infections were established. The same diminished resistance to local infections had been observed in children in whom xerophthalmia was always accompanied, sometimes preceded, by an infection, usually of the lungs. Therefore, when in badly nourished children general infections occur (do they occur in any other kind of children?), pneumonia, or enteritis, they must be regarded as specific deficiency diseases just as much as the xerophthalmia. In 6,000 children examined at the Forsythe Infirmary, Pallini found eleven per cent free from caries and mal-occlusion. Not one of these children had any infectious disease. Of the other eighty-nine per cent, all had had one or more of the acute infections.

There is such a thing as vitamin underfeeding, in which there is sufficient vitamin for the animal or child to grow and reproduce, but not sufficient to be productive of full health. This vitamin underfeeding is responsible for many of the ills of pregnancy. How can a prospective mother eating boiled potatoes, white bread, cooked meat, white sugar and pastries be healthy herself, or produce a healthy child?

McCallum, Simmonds, Price, and other researchers state that "Nutrition of the prospective mother is of paramount importance for the welfare of the unborn child, and influences the developing teeth." Experiments of Gladys Hartwell indicate that requirements of vitamin B in lactating animals are greatly in excess of those of non-lactating animals.

Prenatal: It is estimated that the amount of inorganic salts fixed in the foetus during the last three months of pregnancy is twice as much as during the previous six months. If there is not sufficient calcium to calcify the growing child's teeth it will be taken from the mother's. In the Edinburgh Royal Maternity Ante-natal Clinic ninety-eight per cent of pregnant women suffer from dental caries; fifty-three per cent of these mothers were under twenty-five years of age.

Bone marrow shows an increased liability to bacterial infection upon vitamin deficiency diets, hence the acute infections. There may be at the same time a polynuclear leucocytosis, but there is nevertheless a real fall in the bactericidal power of the blood. *These vitamin and mineral deficiencies provide a nidus for any sort of disease apparently.*

Speaking of intestinal stasis, Sir W. Arbuthnot Lane says that in every case in which he has had an opportunity of verifying it he has found that cancer cases were suffering from chronic intestinal stasis, and that the infection by cancer was an indirect consequence of this condition. He believes that in two generations cancer could be practically eliminated from the human family by return to primitive foods. He says it is the most fatal plague civilization produces, and potentially menaces every adult member of the community. He says, "We know that cancer is the result of the slow poisoning of our bodies under the unnatural conditions which civilization im-

poses on them, and we can prevent it as soon as we can educate civilized people to return to the natural habits and diet of uncivilized people. As it is, intestinal stasis begins in infancy and lasts through all life. As a result, we unknowingly subject our bodies to twenty, thirty, or forty years of chronic irritation and slow poisoning, which sooner or later results in ulcers, appendicitis and cancer. Except in (negligible) chemical cancer it is the poison produced within the body by the stagnant residue of undigested food which produces cancer."

Recently Dr. Chas. Mayo was asked to give his ideas on this subject. He referred to Dr. Frank L. Hoffman as an authority. Dr. Hoffman said that unless the body is in a condition favorable to the development of cancer, the irritating processes which are directly contributing factors are without effect on the system. Furthermore, that some trouble comes from denatured air, more from denatured water, and most from denatured food. In cutting out the manifestation you are merely cutting out the local sore; the condition of the body that permitted this development remains.

Apparently in the interests of health we are wholly to upset our present dietetic practices. Have not these practices upset health? All animals except humans reach an average length of life equal to from ten to fifteen times the length of time it takes them to mature. We average only two or three times our maturing period.

Sixteen million and five hundred thousand of twenty-two million school children in the United States show physical defects of one or another sort. What are they eating? Cooked foods—foods that are denatured, processed, refined, bleached, sifted, demineralized—as decorticated wheat, corn, oats, barley, rice. Forty-one per cent of our drafted men in the World War were rejected because of physical disabilities, and for the same reason—the food they ate. There will come an awakening in this nation against the crime of improperly feeding the youth of the land. It would be well for the medical profession to conduct this crusade.

Cooking brings about an oxidation of the food elements—a conversion of organic minerals into inorganic, which are unassimilable by the human system—a further stewing of the minerals out of the food into boiling water, which is usually thrown away. And so the children have no lime wherewith to grow their teeth, or to maintain the teeth's integrity. The blood deprived of minerals through food degermination withdraws lime from the teeth to carry to more vital centers. No tooth ever decayed until the blood stream had been long deficient. We have all been totally unaware of this process until apprised of this food and disease association in the last few years by expert researchers, both within and without the profession. Completely ignorant, we besought the aid of the toothbrush and various dentifrices, and marvelled that teeth continued to decay. The dentists came in great numbers, and are perhaps performing the most important special service rendered the human race today. Animals fed upon food in which any of the minerals have been removed perish! And of the same diseases that kill the 400,000 children that die every year in the United States under ten years of age. Caries of the teeth is merely the most pronounced symptom of deficiency disease resident within the tissues of the child, and is a forerunner of infections and rickets. Thus we fiddle while civilization burns!

Nature provides a weaning period for the young of all animals. Prolongation of lactation is effected in certain domesticated animals. Growing children drink this milk, but they have defective teeth. Other young animals do not drink this milk and have no defective teeth. Consider the artificiality of the milch cows' surroundings, tethered in sunless barns, without exercise, with by-products food largely to live upon. Have the pediatricians ever protested against this inhuman practice, so deleterious to the animal and the child? Is vitamin A of the butter fat likely to be sufficiently energized in such milk; or will the protein so vital to the construction of protoplasm register what it might register in animo-acids? Proteins found in grain, vegetables and uncooked meat are biologically complete, having eighteen animo-acids. Is this the reason why all the herds of cattle examined for eight successive years in the State of New York gave positive tests for tuberculosis—certified herds included? Scientific commissions investigating the subject in this country and in Europe have agreed that ninety per cent of the cervical adenitis in children is of

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bovine origin, coming through milk and butter. One certified herd of 250 cattle were found upon examination to have seventy-nine cows with marked evidence of tuberculosis. They were producing milk certified to be free from infection, and the children of New York were drinking it.

It is stated that of a hundred Indian skulls in a Washington Museum there is only one defective tooth among some 6,000 teeth. Every defective tooth shows the folly of denatured foods. The ox gets his proteins from vegetation and grasses. Would not those same proteins be sufficient for us? The primitive tribes of Nigeria and the aborigines of Australia are quite without our most prominent civilizational diseases. Our negroes, not having reached the crest of the wave of high living, have yet something coming to them in a greater prevalence of pyloric, gall-bladder diseases and cancer. Their teeth are beginning to crumble. The first effect of the contact of civilized and primitive races is the introduction of respiratory diseases among the latter. It was said in France during the war that certain Senegalese units died like flies of tuberculosis after being in French camps and eating the white man's food. Seeds, leaves and fruits of the vegetable kingdom contain every element necessary to animal life. If these organic substances are not supplied to the body, deficiency must prevail. Wrong kinds of food do not meet bodily requirements, and in so far do not satisfy the appetite, so too much food is taken in a vain endeavor to supply deficiencies.

In a recent number of *Hygeia* (*A. M. A. Journal*) it is stated that owing to a lessened mortality in the acute infectious diseases there is a real prolongation of average human life, but in the matter of cardio-vascular-renal diseases of middle life the medical profession is making no progress. It stands hopeless and helpless, in complete ignorance of the pitfalls that have barred its progress, while the simple remedy of whole foods as Nature prepares them is waiting, clamoring to be of service. And this misery comes from the material we fancy is food! Less than fifteen years ago a definite relationship was established between disease and the food that makes it possible. The idea has spread slowly, and is still looked upon with incredulity. There has always been a tendency to accept disease as something that could not be avoided—as belonging inevitably to life. May not bacteria merely make manifest a deficiency we did not know existed?

There are potentially and actually about a million diabetics in the United States, and the number is increasing. In the sugar producing state of Louisiana diabetes increases faster than in any other state. The annual consumption of sugar in the United States is about 150 pounds per person; in Great Britain 30 pounds; in France 28; and in Germany 16. The body develops its own sugar—all it needs, through its own internal mechanism, from natural foods. It is therefore not necessary to use refined sugars. The body can only absorb 1/10 of 1 per cent of its own volume of sugar. The rest we take must become an excess. The stop gap—insulin—will not be needed by a more liberally educated, less ignorant people than we, who will refuse to drug themselves with lethal doses of sugar. A 50 per cent increase in diabetes appears to have been effected in the last generation. The insurance company tables show that old-age-disease deaths have been doubled in thirty years; that 65,000 people are dying annually under forty from arterio-sclerosis, high blood pressure, kidney, brain and digestive diseases; that each year younger and younger men are being attacked by these old-age diseases. In place of old plagues is the organic degeneration—the premature decay.

We must put back daily into the blood stream what the life cells take from it in the process of living. Only through the food we eat, the water we drink, and the air we breathe can this be done. Drugs won't do it. One hundred and forty-five thousand physicians, myriads of dentists, thousands of hospitals and sanatoria, are seeking to atone for this fundamental food inadequacy by treating its end results. Surgeons cut and explore, dentists patch and pull, doctors dose, manipulate and burn, all wondering over the mystic origin of disease.

We must return to the primitive ways. We must have whole wheat, whole corn, whole oats. There must be no bleached, devitalized cereals ready to serve.

All life is co-ordinated function. All disease is altered function called by different names: tuberculosis, cancer, typhoid, etc. They

manifest themselves differently, these diseases, but they have the same origin in the broken defenses of the body through food inadequacy. The germ theory of disease was a step in a certain direction, but only a step. We are now to take the plunge. Healthy living tissue holds germ life in contempt. All the power of invading bacteria is insufficient to wreck us where our defenses have remained intact—the mucus and the tears. We know, because our men of science teach us, that there is scarcely a nidus in our bodies where germs may operate until the artificiality of our lives has lowered the standard of resistance.

Amid the encircling bloom of deficiency diseases, Nature's food is to be the kindly light that is to lead us out.

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THE ALIENIST AND EXPERT TESTIMONY.*

By SUSAN A. PRICE, M. D., Williamsburg, Va.

It is a great pleasure and privilege to attend this meeting. I think it is most important that medical associations meet and be well attended, for the purpose of reading and hearing medical papers, the exchange of ideas and medical experience and results of personal study while in the recent stage. I think it was Dr. Osler, one of the most interesting, considerate and humane of medical writers, who said that medical text books were out of date before printed, so much time, several years, at least, being required to arrange a text book. We know many changes may and do take place from day to day in the theory and practice of medicine, so it seems much in order that medical societies meet while medical experiences are new for exchange of theories and experience. We value medical books but we know well when reading the best, that we may be reading that which is already well out-of-date and that something else may have been discovered or come into use since. New discoveries are being made every day. We may be perhaps just entering an era of medical science. We may ourselves have discovered much of value in our honoured and chosen profession. It was a pleasure to prepare this paper for this meeting, imperfect as it is. I am reminded of a remark accredited to the President of the American Psychiatric Association at the recent meeting in Richmond, who said that the exchange of ideas was valuable and important, even if the ideas were wrong, so if blunders and errors are apparent in this paper, and I do not doubt that many will be, I will be glad and grateful to have all pointed out.

Alienist is a word I rather hesitate to use, a word exposed to more disparaging comment, regarded with less certain scientific value, often even the vehicle of the "jokesmith" in a laughter-loving and careless age when hardly any serious or scientific subject is absolutely safe from more or less levity and ridicule, than any other word we, as medical practitioners, have occasion to use, or with which we are familiar.

In a way, it may be that psychiatry does stand for the more or less haphazard and fantastic side of medical science if medical science has a haphazard, fantastic or humorous aspect. We know that for untold ages, although the seriousness of mental disease was known and feared, dreaded perhaps as no other disease, yet nothing like the study or attention was given to it as was given to those afflicted with bodily ailments. There always seemed to be a sharp line, imaginary, of course, drawn between bodily diseases and mental troubles. For what were regarded as very obvious reasons, they were seemingly separate and apart, for could not a good mind exist with a poor body, and a good body be host to a poor mind? Many examples can be pointed out in every age of the world.

Mental disease was neglected as such because it was hardly regarded as a disease. No doubt this neglect was furthered and inevitable because bodily sufferers make known their ailments better than those afflicted mentally. Mental sufferers are the last usually to call attention to themselves or to ask for help, more the pity and tragedy, and always serious inroads are made on mental constitutions before coming to the attention of those "who minister to minds diseased."

Mental disease has been even looked upon as a curse or a visitation to be endured in the best way possible, not to be remedied or relieved, and last of all prevented, and few efforts, futile if any were made, were put forth to solve the mystery of insanity. It was considered beyond the power of human effort

*Read before the meeting of the Walter Reed Medical Society, at Williamsburg, Virginia, May, 1925.

or skill. Once any serious move to discover the problem of the insane would have been received with about as much confidence and enthusiasm as the plan of Christopher Columbus was received when he decided to set out to discover America. It was something that seemed impossible, yet Columbus and other great discoverers have had true visions. May not the alienist have a true vision of discovering the secret of the mentally diseased, a secret of many bygone ages, and also of discovering the remedy?

Dealing, as psychiatry does, with so much that is grotesque, and partaking of the burlesque in human behavior, the uncertainties and deformities of the mind, the mere imitation of which often tends to excite mirth and laughter, is perhaps one reason the alienist does not seem to be taken very seriously. He is exposed to many diverse opinions, as many opinions as he may have cases to deal with, and his ability to explain and analyze these fantastic mental deformities is often questioned. There are many different ideas and conclusions often at wide variance as to cause, diagnosis, treatment and prognosis. Each case presents different aspects and, in spite of all the seriousness and the main cause of far reaching disaster and the vital importance of the status of mentality and its bearing on the welfare of the world, the fact remains that the alienist is often the butt, good natured though it may be, of the public at large. We are all acquainted with the light-hearted raillery at the expense of the alienist. Only recently at the meeting of the American Phychiatric Association in Richmond, the joke on the alienist was among those creeping in on a most serious discussion of a psychotic subject. A speaker of wide influence and experience in mental disease enlivened the occasion by telling of a witness called to give expert testimony who had been asked the inevitable question what an alienist was, or words to that effect, and who was also asked if he called himself an alienist. Oh, yes, he was an alienist. What was the definition of an alienist? An alienist was an alienist, but when asked for more specific information he replied that his definition of an alienist was America for Americans; and then he left the stand.

Alienist is a word to be used rather cautiously and carefully if one does not wish to be subjected to rather embarrassing examination at times. Alien means strange; an alienist is one who studies the strange or foreign and is a good word, as words go, made up as words often are in a very incomprehensible way. There are certain words that seem doomed to oblivion, sooner or later to share the fate of the character of Shakespeare's fancy who was "done to death by slanderous tongues." Alienist may be one of those words. More respect and serious consideration should be given the alienist's efforts when he is called upon for expert opinion. It is coming to be an almost every day occurrence that the alienist is called in when the question of sanity or insanity comes up in criminal court cases or in any court case where there is a question involving the mental condition of a person at the time he committed an offense. A difference of opinion may exist between the two sides of the question and a battle of words and technical phrases ensues presenting a confusing spectacle to onlookers. Opposing alienists give expert opinions about the same person, apparently using the same words and technical terms with the same meaning, but results are very different and the question may come up as to what expert testimony is? Is there such a thing as an expert in insanity; of what use is an expert in the courts; what real influence has an expert on the mental condition of criminals or those being examined; who is qualified to be an expert? What class of cases should come in the hands of the expert for analysis and to what lengths should expert testimony extend? What are the limits of inquiry into the mental condition of a person and to what depths shall judgment extend? Perhaps there is no more thankless or unsatisfactory task or experience than serving as an insanity expert in court, when we consider what an extraordinary state mentality is, consisting as it does of a "confused, chaotic mass," kept in order only by will, training, custom, or as is often tried with varying success, compulsion. A healthy mind is a condition of equilibrium or balance. It really seems it should be an easier matter than it now appears to distinguish the unbalanced mind from the well-balanced mind.

Expert is a small, insignificant word with a large and significant meaning. It has been said that an expert is not one able to "elucidate the mysterious, but one able to appreciate the significance of the obvious," and this ap-

plies most aptly when one is analyzing the mentality of the insane or the mentally deficient, the appreciation of the significance of the obvious not the elucidation of the mysterious. I have heard an illustration given of an expert, may be an agricultural expert, familiar in the ways of the earth, working in the ground he has known all his life, yet it may be stated that no agriculturalist ever has or ever will be able to predict exactly what even one acre of ground is capable of producing.

Expert knowledge is very limited everywhere, even in the most well-known surroundings. No approach can be made to solving the mysteries that are about us all the time. We may hear and speak of those who have spent perhaps the best part of their lives in the study and observation of the mentally defective, yet no one, though constantly at work in his particular line, will ever fathom the vagaries or causes of the vagaries of the mind. Alienist has become a word almost synonomous with court trials. We use the word quite frequently to be sure, but we find the word most probably used in connection with expert testimony, which every year seems to be coming more to the front and into public notice and the services of the alienist are being frequently sought for expert analysis of the minds of those with criminal tendencies. Now there are many men these days (we hear of few women) who have attracted wide attention as alienists at large; alienist seems to be associated more peculiarly with men than most any other medical term; and in these days of equal rights and privileges that is in itself interesting. Still a remnant of mystery or superstition clings to the person bereft of his mind. Even in these days when much has been added to women, rights and privileges in scientific research are also now enjoyed equally by men and women, the deepest insight into the workings of the mind, and the key to the peculiarities of the psychic, the almost unapproachable in medicine, and what has been called by the old negro preacher, "the unscruing of the unscrutible," is still retained largely in the keeping of our medical men. We cannot easily break away from the old established ideas of the mysterious workings of the mind and we can readily understand what a difficult matter it is to attempt to explain vagaries of action that control thought or action, or to explain the vagaries of conduct, yet the alienist is often asked what in his opinion was the state of a certain mind at a certain time or stage in a man's life. Was he sane or insane when a certain act was committed? Should any one attempt to make a statement in reply, only to have his evidence publicly attacked, argued over, statements and ideas, and even motives questioned and perhaps ridiculed? As far as the alienist's bearing on the outcome of the case is concerned he had better not have been called upon to testify.

We speak of difficult and obscure cases, supposedly out-of-the-ordinary, but which seem to be becoming all too numerous. Any one is able to make a diagnosis of the frank or gross type of mental disease. It is the complicated type that requires fine points of diagnosis and analysis to be made. In the present state of society there is so much universal confusion, often ignorance and impatience, exhibited in regard to mental disease, it is difficult for the alienist to get the proper support and hearing, when a case presents obscure and difficult points for analysis, to make his testimony in court of real value and significance. The alienist giving expert testimony in court has a very different position to fill than the surgeon who gives expert opinion as to the condition of a broken leg, a fractured nose or fracture of the skull, when he is expected to give an expert opinion as to the condition of the mind. However, he should be able to command the same respect and hearing as any reputable surgeon, oculist, or general practitioner testifying as to the bodily condition of persons in question. We know the alienist now enjoys no such privilege. We have only to follow the proceedings or press reports of some notorious court case in which the alienist figures, to have an idea of the ordeal to which the alienist is exposed. It is in court that the alienist is most often heard about and exploited, to use a rather sinister word, and exposed to the peoples' judgment. In court he faces a judge and jury, a more or less critical public, often a rather merciless press, and worst of all, perhaps, opposing alienists, expert in the same subject, but with different viewpoints, different objectives and become, so to speak, "the enemy in his own household." Under these circumstances the alienist may find himself at the end of an imperfect day in court, alone with his ideas, conclusions and state-

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ments and a victim of divergent opinions and cross-examination, so often complicated by the use of many words, phrases and technical terms not in general use and meaningless to those conducting the case. He may have heard the court declare his testimony of little value in the case and so instruct. This may happen to any alienist, no matter how competent. It has happened often in the past few years, and will continue to happen unless some more exact plan is adopted for the alienist to follow when giving testimony on conditions of the mind.

We have a demonstration now and then attracting nation-wide attention and morbid interest and curiosity to revolting crimes and actions that could have been conceived and carried out only by a diseased mind. Yet the alienist perhaps fought a loosing battle in trying to convince persons, who, for various reasons, thought differently. Analysis of the state of mind of persons who have committed crime, or who have been exposed to court trials is rather modern action, we might say an experiment. Ideas as old as crime itself have been held that heinous, grave, serious and unusual actions were committed by people in their proper minds, even murder, as far back as Cain and the first murder, and the criminal has been tried by law and often sentenced and punished. The enlightenment and advance of civilization has caused more thought and study of the processes of the mind, and research and investigation into causes of human conduct is being carried on. There is now a tendency to more humane judgment in the cases of socia' offenders than the former strict adherence to the old rule, "an eye for an eye, and a tooth for a tooth," permitted.

In line with many departures from established customs the difficulties of the alienist in court have been manifold. No subject may present such a variety of opinions as to what constitutes a normal state of mind. Can one ever become expert enough in the devious and labyrinthine turnings and twistings of the realms of thought to meet the endless questions that arise when an attempt is made to explain the usual human behavior known as sanity, or the deviation from established rules of human conduct known as insanity? We speak of a difficult case when a contest of judgment arises and when dissatisfaction and criticism come over the question of sanity or insanity in an individual, or the probable state of a person's mind in the past and the bearing this state may have had on his actions or emotions at a later time. We may well appreciate the difficulties encountered in giving expert opinion touching the extraordinary processes involved in a mind's activities, and yet this opinion is being sought, expert testimony being given and the ends accomplished in a way. Of course it does not require the services of an expert in mental diseases to analyze or demonstrate actions of an imbecile, or an idiot, or the members of that large and ever growing class of mental deficients known as morons. Moron is a word derived from a Greek word meaning foolish, the adult with the intelligence and judgment of a child. There are morons of many degrees and members of this type of mental deficients are constantly filling up the ranks of criminal offenders. It is very important and it should not be difficult to identify the moron, especially if any record is at hand of previous life and activities. The layman may soon come to know this type of offender well, who is becoming far too familiar to us all.

A well-known lawyer of Chicago, recently active in the case of two young criminals of the homicidal type and a case in which alienists were brought into much prominence, made the statement that the modern criminal trial need last only a very short while, a decision being speedily reached. The resulting sentence often shows how apparent the final decision was from the first. We may wonder at hearing such a statement from an authority in crime. We are apt to think that a criminal case may be drawn out almost indefinitely, with so much divergent opinion often leading such a devious course.

We ourselves often are surprised and wonder how so much argument can arise over the state of person's mind, when it appears so plain that mental defect exists. The state of a criminal's mind may resemble the will-o'-the-wisp of judicial sentence. We are familiar with the brain substance as seen after death, a lifeless solidified mass or object with various lines and subdivisions resembling sponge matter, but it has been almost demonstrated that during life the brain is more or less in a fluid state, perhaps constantly in motion, ideas flowing and eddying like tidal waves, as the ocean tides mysteriously ebb and flow, subject to some fixed law of nature. We can conjecture

that our thoughts and emotions are also subject to fixed rules governing human conduct, the great plan of thought and action depending upon nerve stability, and, in a measure training. Our thoughts are beyond control, differing in this respect very much from our actions, which should be and are controllable by well-balanced people. Thought is sanity, action may become insanity. We are all conscious of harbouring impossible thoughts that throng our minds, wildest of wild ideas, perhaps, and impossible of being carried out, for sanity depends on action and not giving way to wild ideas. An interesting statement has been made that no set of thoughts or ideas can occupy a place in our minds and be in full control longer than thirty seconds at a time. Other ideas and thoughts take their place and dominate for a short time, so the sanest person may be host to most insane ideas, but he keeps control of his actions and is master of his mind and his actions. This reasoning constitutes sanity, so it would seem to be a relatively simple process for an alienist to be able to put in understandable words the mental status or condition of a person on trial as he sees it so that a jury of twelve could easily understand what he is talking about and what he wants them to know. The time may come when a person who has committed murder, assault, arson, theft, forgery, adultery, maiming, practiced prostitution, is a victim of drunkenness or shows any lack of regard for the well-known laws and rules for order, will be called insane, whether of a chronic or temporary nature may be left for the court to decide. The alienist has made his statement, leaving no room for argument, cross-examination or views of opposing alienists.

We may make this statement. Why? Because the insane do all these offenses and will continue to do them; these are insane actions; every known crime is committed by the insane. Do away with insanity and crime will be done away with. The tendency to crime seems to be inherent. How else can we explain the continual recruiting of the ranks of criminals and offenders that goes on from age to age? Why are laws continually being made and continually being violated? Why is it that a law once made is always a law and must continue to be a law, instead of an accepted custom. There can be no letting up, for even the very oldest laws are the laws most frequently broken. Law breakers are always about, because there are minds that can not regard or understand the meaning and necessity of laws. We may take a look at war, wholesale disaster resembling lunacy in all its phases, instigated by those who have characteristics invariably present in the most dangerous and insidious forms of insanity. We look back to the history of war and what led up to wars and invariably the trail leads to strange company; persons of faulty heredity occupying positions of power; monarchs possessed with desire for gain, but with just as much desire for that most fleeting and sinister quality, power; ideas of grandeur and display; insane desires to rise and rule, regardless of what may happen. We recall the sad spectacle of young men who emerged from the late war with nerves shattered, minds destroyed and the many causes promulgated for this wretched state of affairs. How could these young men enter the war apparently sound and emerge in such sad condition mentally? May not these young men have only run true to form in carrying out the general madness all about them? If the world truly desires to be free from the repetition of the madness and insanity of war, as well as from other crimes and offenses against the peace and security of the world, the expert alienist must come more and more to the front in peace and war deliberations and analyses of the meaning and processes of human behavior and be able to voice his findings in no uncertain terms. We live in an era of psychology, the study and science of human behavior. In schools and colleges it is an important study and in all branches of learning it has an important place. The alienist, as an expert in his subject, should be able to tell in language understandable and good for ordinary practical purposes, what intelligence is and its uses; nature's gift, a gift that may, as a gifted writer says, "be lost by accident, disease, neglect and misuse. We may not all be expert enough so that after "fifteen minutes' interview with a person we will be able to give the measure of his intelligence," but the alienist should be regarded as a master of his subject and he should so impress those who may look to him for opinion and advice. In a recent issue of a current magazine there is an article of much interest on the subject of psychiatry in the courts that shows a hopeful sign that the expert alienist will in time have

a real place of power and usefulness in all the courts of the land. He surely needs such a place, so that in court trials in the future, when having expert testimony as a part of the conduct and taking a part in the final outcome of the trial, the proceedings may be free from the anomalies and surprises that confront us now when expert testimony is given in a court case.

SINUSITIS—DIAGNOSIS AND TREATMENT.*

By G. B. TRIBLE, M. D., F. A. C. S., Washington, D. C.

The embryological and anatomical features of the sinuses are the determining factors in the diagnosis and treatment of their pathologic conditions. Grossly, they may be divided into a group with gravity drainage and another without gravity drainage, and the development or lack of development of the normal pneumatization has a great influence in the course of any infection. Experimental work with animals has shown the great influence of proper nutrition and nutritive agents in sinus development. Reviewing for a moment the anatomy, we find, in the case of the frontal sinus, a development in various ways: by a direct extension of the whole recessus frontalis, or from one of the anterior groups of ethmoid cells having their origin in the frontal furrows. This sinus is represented in its rudimentary state early in infancy, though not necessarily in its frontal location, but having its future drainage determined by its embryological type. If the development is from an anterior ethmoid cell, there is a true naso-frontal duct; if by direct extension from the recess, there is no true duct. It frequently varies on the two sides in the same individual; in adult life it may be divided by septa; its floor may be encroached upon by the bulla, occasionally absent, but not infrequently found in the vertical portion of the bone. One can readily understand the unsatisfactory operative field this presents, so much so that the pendulum in the Viennese Clinics has again swung to the older radical mutilating operations with no attempt to preserve a supporting bridge. The nasal frontal duct is even more variable in its anatomy, and probing it successfully is rather more rare than is commonly supposed.

*Read before the District of Columbia Medical Society, November, 1923.

Maxillary: This sinus develops early as a slit-like indentation in the nasal lateral wall, gradually hollowing out the maxillary bone, and limited by the close proximity of the alveolar process to the orbit. By this same consideration, the inferior nasal meatus is not in direct contact with the infantile maxillary sinus until after eight years of age. This is to be borne in mind in exploratory punctures in children, or the antral cavity may be entirely missed and the cheek penetrated. Further than that, the danger of injury to the tooth buds must be remembered, and the narrow transverse diameter must be borne in mind in both external and intra-nasal operations. The most common fallacy in the adult sinus is the belief that the canine is in relation to the antral floor, the first pre-molar, and to a greater extent, the second pre-molar, but according to Schaeffer, the molars are the most intimately in contact. Compartments formed by ridges are frequently found, interfering with drainage. Infections of dental origin are commonly given as from 20 per cent to 30 per cent of antrum infections. Probably in private work, the percentage will depend upon the character of referred practice.

Dehiscences of the bony walls are not unusual, particularly in diseased conditions in any of the sinuses. For the reason that the normal ostium is high, needle puncture and washing will bring out pus after apparatus like the Sorensen or Coffin sinus suction has failed, and must be used in treatment and diagnosis. The sphenoid and posterior ethmoids were, prior to the anatomical studies of Zuckerkandl, not considered surgically accessible, but following the leadership of Hajek, a line of operative procedure was built up that has stood the test of time and is the basis of Sluder's intra-nasal work. To Sluder belongs the credit of bringing before the medical profession the associated conditions, due to the anatomical relationship of the sinuses. In the case of the sphenoid, developing relatively early, assuming sufficient size by the end of the second or third year to be surgically important, with its ostium high, varying from 2 mm. to 5.5 mm. from the cribriform plate, retaining secretions, or subject to inflammatory changes in its mucosa or bony walls, giving rise to widespread nerve disturbance, the surgical importance cannot be over-emphasized. With wider pneumatization in the

adult, the contents of the sphenoidal fissure, the ophthalmic, oculomotor, trochlear and abducens, with a possible involvement of the foramen rotundum with the maxillary, or the foramen ovale with the mandibular, but especially important is its relationship to the optic nerve, which may even be contained in its cavity. With a hollowing out of the body of the bone, the vidian canal is exposed and the vidian nerve is practically in the sinus, or protected by the thinnest layer of bone, and subject to any of the inflammatory changes common to the nasal chambers. Directly in contact with the inferior surface of the body of the sphenoid is the sphenopalatine fossa, containing Meckel's ganglion. Surrounding the sphenoid and in close contact with it is the dural cavernous sinus; above it the pituitary. Structurally, the anterior surface is thinnest in the upper portion near the cribiform, heavier toward the floor, frequently unequally divided, incomplete septa forming partially closed chambers and extending often as diverticula into the greater and lesser wings, presenting occasional dehiscences of the wall, so that its mucosa comes in direct contact with the dura. The relationship of the optic nerve and commissure early attracted attention to the sphenoid and posterior ethmoids. In its course the average length of the nerve is 32 mm. to 55 mm., acording to Schaeffer, with 25 mm. to 40 mm. intra-orbital, the remaining portion in relation to the posterior ethmoids and sphenoid sinuses.

In considering the ethmoid cells, the variations of anatomy are so striking that it can readily be seen there is no type. This is common with other organs undergoing involution. Developing as extensions of the nasal mucosa from middle, superior, and supreme nasal meatuses, and found early in fetal life, there is no uniformity of development, and each cell communicates with the meatus from which it arises. In general two groups can be distinguished, an anterior group developing from cells below the attachment of the middle turbinate, and the posterior group from above the line of conchal attachment. In addition, there is a so-called middle group, classed by Schaeffer as in the anterior group, which later is found as the bullar cells.

The posterior ethmoid cells may pneumatize the supra-orbital plate of the frontal, or the infra-orbital plate of the superior maxillary, or extend backward into the sphenoid.

In the adult, there are even more wide variations, ethmoid-frontal, ethmoid-lacrimal, ethmo-palatine, or extension to the middle turbinate. Surgically one of the most common findings is an extension of the anterior ethmoid cells into the floor of the frontal sinus, giving the so-called frontal bulla. Dehiscence in the bony wall, in common with the other sinuses, may be embryological in origin, or as a result of a rarefying osteitis, and a meningeal infection, may result from contiguity. Posterior development of the ethmoid cells may so encroach upon the sphenoid that the optic nerve may be surrounded by post-ethmoid cells, and other cases may be so arranged that the sphenopalatine ganglion may be in contact with the post-ethmoid cells. Infundibulum cells extend often into the agger nasi, and even into the inferior concha.

Experience has taught that a polysinusitis, rather than involvement of a single sinus, is the rule, the exception being the ascending antral infections from alveolar apical abscesses, usually involvement from direct extension.

Sinusitis is widespread. The simple looking coryza that does not clean up, the neuralgias around the face, neck, and shoulder, should all be danger signals. Skillern quotes Gradenigo as giving positive autopsy findings of 22 per cent in 203 post-mortems, regardless of causes of death; Harke 34.5 per cent in 146; Oppekofer 47 per cent in 200 cases; while in death from influenza and pneumonia it ran higher. In the great clinic of Chiari, using the older technique, in the presence of macroscopic free pus, granulations, or polypi, 2 per cent of cases were given as sinusitis. The bacterial findings are chiefly streptococci, viridans and hemolyticus, staphylococci, influenza bacilli or pneumococci, but any organism that invades or finds a suitable habitat in the mouth, nose, throat, or upper respiratory tract may be found in the nasal accessory sinuses. Pearce, of Boston, in autopsies on seventy-five children dying of diphtheria, got positive sinus cultures from every case. This simply tends to confirm what is found in other portions of the body, that there is no sharp limit or boundary for bacterial invasion. Clinically, we may divide the types of sinusitis into:

1. Catarrhal, (a) acute, and (b) chronic
2. Suppurative (a) acute, and (b) chronic
3. Hyperplastic

4. Atrophic
5. Vacuum
6. Mucocele
7. Luetic
8. Malignant

And to these may be added a type or complication of other types, an osteitis or osteomyelitis of the sinus walls, due to their paucity of protection.

The symptoms presented depend upon several factors; the sinus being chifly involved, gives the predominant tone or color. The acuity or chronicity of the infection, the question of the general physical condition and mental make-up of the patient, for instance, childhood and the nutritional factors continually associated with that period, influence, markedly, the condition.

Subjective symptoms cannot be relied upon to establish a diagnosis, but taken in conjunction with the local fiindings, trans-illumination, and X-ray, offer a deal of help, for the one great complaint of almost universal prevalence at some time or another in sinusitis is headache. Headache may or may not be definite in its location. Skillern has given certain areas as being relatively characteristic, over the brow, indicative of maxillary or frontal suppuration, frontal headache from frontal sinusitis of a chronic type, vertex pain from the sphenoid and ethmoid, pain in the occiput from the sphenoid. In this connection, it is interesting to note that with the use of the suction apparatus, and the production of a negative nasal pressure, there is more often a complaint of occipital pain than any other. Next in frequency is pain above and behind the eye. Since more than one sinus is usually involved, any combination or variation may be encountered, and confusion will occur if localization by means of direct pain is attempted.

Sinus headaches, in general, are distinguished from those of ocular origin, due to refractive errors, by their independence of eye use, by their tendency to be worse in the morning and gradually wear off during the day. This characteristic depends upon the drainage being established, or the approaches to the ostia becoming less congested by moving about, or assuming the erect or semi-erect position.

Eye headaches are frequently frontal, clear up on eye rest, unless, of course, due to some inflammatory condition such as iritis, iridocyclitis, or glaucoma. Change of position, such as bending forward, aggravates a sinus headache. Ewing's sign, pain on making pressure over the site of the insertion of the superior oblique, is a diagnostic point, and indicates an inflammation of the frontal sinus, and is caused by an extension to the periosteum at the insertion of the pulley.

Skillern gives as causes of headache, common to sinus disease, the following:

a. Swelling of the mucosa, with nerve pressure.

b. Direct contact of the swollen mucosa.

c. Negative pressure in the sinus.

d. Ulceration of the mucosa, with nerve involvement.

e. Absorption of toxins.

f. Disturbance in the blood and lymph circulation at the base of the skull.

Among the moot question of this phase of rhinology is the Sluder syndrome or symptom complex—pain down the neck and arm. Sluder's idea is that both headaches and neuralgias are evidence of peripheral nerve irritation. We should remember especially the anatomy of the sphenoid, and the sphenopalatine ganglion, a trunk lying practically in a paranasal cell, sub-mucously or nearly so, and exposed to all the nasal and sinus influences, good or evil.

The intimate eye relationship, with the sinus, was first stressed by Ewing and Sluder, and the line of demarcation between true eye conditions and those of nasal or paranasal origin has become shadowy indeed. When one considers that the eye, in toto, is surrounded on three sides by paranasal cells, often with pneumatization advanced far into the maxillary and frontal, nearly completely surrounded, and has in addition the optic nerve and its vessels against the wall of a cell or actually in one for a third of their length, its chance of escape is rather slight. The most simple form of transmission is by contiguity. It may be evidenced as an openly inflammatory reaction, from the extension of suppurative or necrotic processes, showing up in the orbit as a cellulitis, or orbital abscess.

Pressure on the optic nerve and impairment of the circulation in its passage along the side of the sphenoid or post-ethmoid as a result of inflammatory exudate, disturbance of ocular motility and displacements of the globe can all result from sinus disease. Muscle imbalance may be due to inflammatory changes in

the bone at the ocular muscle insertions, as well as from the absorption of toxins. Visual field changes, with no definite opthalmoscopic picture, may have their source in the paranasal cells.

General symptoms in relation to sinus disease have not been well worked out. Mental irritability and unstability have been thought more or less characteristic, perhaps due to a neurosis from neglected symptoms.

Gastric and gastro-intestinal disturbances from swallowed pus from pharyngeal wall drainage of the posterior group may occur.

Objective symptoms vary with the clinical type, and should be checked by radiograph, for a proper anatomical study if for no other reason. The acute and chronic catarrhal conditions will show merely a nasal hyper-secretion, difficult to distinguish from an acute rhinitis or hypertrophic rhinitis, and not necessary so to do, for usually they are analogous conditions,—no free pus, no pus on aspiration, negative transillumination in a typical case, negative radiograph, and response to cleansing the nasal mucosa, attention to diet, exercise and dress, and mild astringent, antiseptic tamponing.

Suppurative sinusitis, acute, offering relatively no difficulty in diagnosis, patient sick, mild leucocytosis, unless complicated, may be almost fulminating in its course. It depends for severity upon the infective organism. Pus is foul in infections from dental origin. The speculum and head light show free pus, but need a non-yellow light of high intensity, such as the Leitz Midget arc, or Spencer microscope lamp. Pain over affected sinuses and local signs of inflammation usually clear on rest in bed, suction, followed by irrigation to remove secretions, and then tamponing with antiseptics, or the use of the Arbuckle syringe, filling the recesses beneath the turbinates with 1 per cent or 2 per cent mercurochrome. Transillumination shows dark areas, and X-ray shows partial or complete opacity, more likely partial, for X-ray changes are not necessarily due to pus or fluid, but more often to bony changes. If uncomplicated, healing is rapid. If drainage cannot be established by medicinal therapy, surgical intervention is needed, depending upon the sinus. In the antrum, a pre-turbinal opening is made, followed by lavage through a eustachian catheter, or Killian canula. In case of the upper sinus group, resection of the anterior end of the middle turbinate is used, and external operations only if constitutional symptoms are marked.

Chronic suppurative sinusitis is a sign that both nature and man's efforts have failed. Drainage has not taken place freely enough, changes have occurred in the mucosa and the bone, and surgical treatment is the rule.

Radiographs are here invaluable, and cannot be replaced or substituted by transillumination. The original infective agents have often been replaced by secondary infections, and microscopic findings are not much to be relied upon.

For anatomical relationship, when the financial resources of the patient are limited, an anterior-posterior view will usually suffice, and is preferred. W. B. C. is of relatively little value. Usually a secondary anemia, pain, headache, frequent eye manifestations, and the transillumination and radiograph findings make the diagnostic picture.

Operative interference is here necessary, and usually of a radical nature, for the antrum, the Luc-Caldwell or one of its modifications, bearing in mind the danger of devitalizing two or more teeth. In case of the frontal, a Killian, Coakley, Lynch, or modification is used attempting to preserve the facial symmetry. If only sphenoids or ethmoids are involved, the intra-nasal operation of Sluder affords the safest procedure.

The hyperplastic type is associated with a hyperplastic rhinitis, polypoid degeneration is frequent. Grossly, there is a choking of the upper nares, from the middle turbinate upward. Mucosa shows a condition similar to that in hay fever. While no macroscopic pus may be noted, microscopic pus is found, and it is here that extremely good illumination is essential, and the use of the Leitz arc lamp, with its carbons, or the Spencer microscope lamp, is invaluable. It is termed hyperplastic rhinosinusitis by Beck. It can offer great trouble in diagnosis, and is of great importance in the sphenoid and posterior ethmoids. The inflammatory processes involve the nerve trunks, and give the referred pain and neuralgias. They show relatively little to the usual head light and speculum examination.

The high power arc lamp, and the use of the naso-pharyngoscope are here essential, and a Wappler invention with a straight trocar and

canula enable an intra-antral inspection as well.

Hyperplastic inflammatory changes account for the failure to relieve symptoms by surgical intervention in the posterior, ethmoid and sphenoid sinuses. Small areas of edematous tissue cause nerve disturbance which does not stop when the sphenopalatine ganglion is cocainized, for the pain arises in the sphenoid and the ganglion is peripheral to the seat of the pain.

Profuse intermittent discharge of a watery character simulating hay fever is frequently found in these cases. Treatment requires the greatest patience and is combined medical and surgical. Resection of the middle turbinate and opening and draining the sphenoid and posterior ethmoids is frequently resorted to. General systemic treatment is always necessary and the possibility of an anaphylaxis is not to be overlooked, as a contributory factor. The usual local medicinal measures, cleansing solutions of an alkaline, non-irritating character, pressure massage of the inferior turbinates, packing and occasional linear cauterization of the inferior turbinates, or a shearing away of the redundant tissue of the lower border, are all, at times, indicated.

Atrophic rhinitis and rhinosinusitis is characterized by an atrophy of the mucosa, a rarefaction of the bones of the turbinates, especially the lower, and is by some authorities, presumed to have its origin as a sinusitis, particularly of the antrum. Treatment has not been of a highly successful nature in the true cases. The ethmoids and antrum are chiefly involved and after the use of iodine-glycerine or ichthyol-glycerine tampons, mercurochrome irrigations and packing, some surgical attempt is usually made to clear out the affected sinuses and reduce the gaping apertures caused by the atrophy of the mucosa. These cases complain of an inability to breathe freely and this is theoretically due to the layer of stagnant air along the sides of the nares, the current being confined to the middle. The impression of the patient is that there is an obstruction, whereas, in fact, the aperture is much larger than normal and by glatzel mirror, it can be shown that he expels a tremendous blast. Surgically, an attempt is made to clear out the diseased tissue of the antrum and ethmoids and bring the freshened edge of the inferior turbinate over to a freshened area along the septum and secure it there by heavy suture. This tends to do away with the diseased areas, make free drainage into the antrum and reduce, at the same time, the widened channels.

Vacuum sinusitis affects the frontal, is influenced a great deal by a high narrow nose, high palatal arch, enlargement of the middle turbinates, or an engorgement of the mucosa of the superior meatus. The normal ventilation of the ostia is interfered with and vacuum headaches arise. In this connection, the rarity of true sinusitis among the negroes may be noted, polypoid degenerations are sometimes found, luetic bone changes are common, but a true sinusitis is rare. This is probably due to their facility of ventilation and drainage with their low noses and rather wide chambers, certainly not due to their freedom from affections of the upper respiratory tract. In the vacuum cases, correction of septal deflections, fracturing the middle turbinate toward the septum, or removal of its anterior end, is usually successful. Preliminary to shrinking with weak cocaine and adrenalin solutions, the application of astringents should be attempted and will usually afford, at least, a temporary relief.

Mucocele is characterized by slow progress and little pain, due to closure of the natural drainage channels and accumulation of secretions, and it affects usually the frontal and ethmoid cells. It may undergo secondary affection and by absorption of the watery elements has been reported as becoming as more or less solid or caseous. This condition can best be diagnosed by the X-rays. When the large cell with thin walls will attract immediate attention, relief is, of course, by surgical measures.

Luetic involvement is protean in character, affects the sinuses as well as the other parts of the body. It is characterized as usual by an obliterating endarteritis and a rarefying osteitis. Operative exposure may show thin crumbling sinus walls or absence of bony structure over large areas. It yields in a syphilitic phase to the usual treatment and the local condition is handled symptomatically, depending entirely upon the type of sinusitis it simulates.

Malignant diseases of the sinuses are relatively rare, probably the most commonly found is involvement of the antrum, arising from an irritative focus around an infected tooth socket but may arise *de novo*. There is often a per-

sistent dental neuralgia, sometimes a first and always a most distressing symptom, and one which has led to grave errors in diagnosis until irreparable damage has been done. The treatment is that of malignancy elsewhere, modified by the anatomical relationships peculiar to the region involved.

In any of the suppurative conditions, there may arise an osteomyelitis, from direct extension of the infection to the bony walls. It may follow surgical intervention, with the necessary breaking down of the natural protective barriers. Particularly is this true in the case of the frontal where the periosteum has been stripped from the bone extensively. This is one of the advantages of the Lynch operation, and also of Coakley's modification of the Killian. Treatment of osteomyelitis is the same as in other regions,—removal of the dead bone, free drainage and attention to the general health. The question of vaccine therapy in suppurations of the paranasal cells has been, by the majority, answered in the negative; that is, no particular value has been found. As a means of raising the resistance and increasing the bactericidal power of the blood, there are circumstances in which it is advisable, but the low index of absorption from the sinuses is well-known and probably accounts for the relative rarity of systemic infections from sinus suppurations. Large collections of pus are found that have been known to exist for years with but little deterioration in the general health.

Prophylaxis, in general a mild preventive treatment, should be taught all patients with upper respiratory afflictions and a first great point is avoiding the unnecessary blowing of the nose, particularly when both sides are held. It is rather pathetic to see the young mother's pride in her offspring's vigorous nose-blowing. It is simply spreading infection to the sinuses and ears. The next is a question of douching and insufflation from the hand as carried out by the average patient. Does it do good or do harm? Probably harm. It can do but little possible good. The next point is the great desirability of the surgical removal of all obstructions, and making an attempt to equalize the ventilation of the nasal chambers.

Co-operation with the dental profession in advising the regular inspection and prophylactic treatment of the teeth and surgical removal of those showing apical absorption in the contiguous antral area will cut down the number of antrum infections of dental origin.

1026 *Sixteenth Street, N. W.*

Proceedings of Societies

The Southside Virginia Medical Association

Met in Petersburg on Tuesday, September the 8th, with the largest attendanc of its history. Dr. H. M. Snead, of South Hill, presided. A splendid program had been arranged, three of the most interesting features being a discussion of Birth Control by Dr. W. A. Plecker, State Registrar of Vital Statistics, an X-ray motion picture demonstration of the Gastric Motor Phenomena by Dr. Wright Clarkson of Petersburg, and an X-ray and motion picture demonstration of the activities of the Bronchoscopic Clinic of Philadelphia by Dr. L. H. Clerf, associate of Dr. Chevalier Jackson.

Dr. H. M. Snead, South Hill, was appointed delegate from the Association to the Richmond meeting of the State Society.

After the meeting, the visiting doctors were given a trip through the newly discovered tunnels of the Civil War near Petersburg and an excellent dinner was served at the country club by the Petersburg Faculty.

The next meeting will be held in South Hill in December.

R. L. Raiford, *Secretary.*

The Medical Association of the Valley of Virginia

Held its regular semi-annual meeting in Winchester, September 24, under the presidency of Dr. D. M. Kipps, of Front Royal. Luncheon was tendered the members between the morning and afternoon sessions. A resolution offered by Dr. Hunter H. McGuire, of Winchester, advocating the legislative changes proposed by the Medical Society of Virginia in reference to income tax reduction and the Narcotic tax, and providing that a copy of these resolutions be sent to our senators and representatives, was adopted. Dr. P. W. Boyd, Winchester, was elected delegate to the Richmon meeting of the State Society, and Dr. Guy R. Fisher, Staunton, was elected alternate.

The following officers were elected for the coming year: President, Dr. P. W. Boyd, Win-

chester; vice-presidents, Dr. Alex F. Robertson, Jr., Staunton, Dr. C. O. Dearmont, White Post, and Dr. J. H. Deyerle, Harrisonburg; secretary, Dr. L. F. Hansbrough, Front Royal; and treasurer, Dr. M. P. Jones, Churchville.

The Mecklenburg County Medical Society

Met at the Chase City Hospital, September 22, with a good attendance. A number of interesting papers were read and discussed. Dr. W. W. Wilkinson, La Crosse, was elected president, and Dr. A. T. Finch, Chase City, secretary. Dr. Finch was elected delegate to the coming meeting of the State Society and Dr. Wilkinson, alternate.

The Fairfax County Medical Society,

At a recent meeting, elected Dr. James H. Ferguson, Clifton Station, Va., president, and re-elected Dr. Wm. P. Caton, Fairfax, secretary. Dr. William Meyer, Herndon, was elected delegate and Dr. F. M. Brooks, Swetnam, alternate, to the Richmond meeting of the State Society.

The Truth About Medicine

In addition to the articles enumerated in our letter of July 31st, 1925, the following have been accepted:

E. Bilhuber, Inc.
Theocalcin
Theocalcin 7½ Gr. Tablets.

Lederle Antitoxin Laboratories
Anti-Anthrax Serum 20 c.c. Vial.
Tuberculin Pirquet Test ("T. O."), 10 Capillary Tubes.
Tuberculin Pirquet Test ("T. O.") 25 Capillary Tubes.

Merck & Co.
Iodipin 40 per cent.
Ampules Iodipin 40 per cent, 1 c.c.
Ampules Iodipin 40 per cent, 2 c.c.

H. A. Metz Laboratories
Novarsenobenzol-Billon 0.15 Gm. Ampules.
Novarsenobenzol-Billon 0.3 Gm. Ampules.
Novarsenobenzol-Billon 0.45 Gm. Ampules.
Novarsenobenzol-Billon 0.75 Gm. Ampules.

H. K. Mulford Co.
Proteins Dried—Mulford
Almond Protein Dried—Mulford, Apple Protein Dried—Mulford, Asparagus Protein Dried—Mulford, Banana Protein Dried—Mulford, Barley Protein Dried—Mulford, Bean (Lima) Protein Dried—Mulford, Bean (Navy) Protein Dried—Mulford, Bean (String) Protein Dried—Mulford, Beef Protein Dried—Mulford, Beet Protein Dried—Mulford, Buckwheat Protein Dried—Mulford, Cabbage Protein Dried—Mulford, Cantaloupe Protein Dried—Mulford, Carrot Protein Dried—Mulford, Cat Hair Protein Dried—Mulford, Cattle Dander Protein Dried—Mulford, Cauliflower Protein Dried—Mulford, Celery Protein Dried—Mulford, Chicken Protein Dried—Mulford, Chicken Feather Protein Dried—Mulford, Clam Protein Dried—Mulford, Cocoa Protein Dried—Mulford, Codfish Protein Dried—Mulford, Coffee Protein Dried—Mulford, Coli (Communis) Bacillus Protein Dried—Mulford, Corn Protein Dried—Mulford, Cucumber Protein Dried—Mulford, Diphtheroid (Polyvalent) Bacillus Protein Dried—Mulford, Dog Hair Protein Dried—Mulford, Dysentery Bacillus (Polyvalent) Protein Dried—Mulford, Eggplant Protein Dried—Mulford, Egg White Protein Dried—Mulford, Egg Yolk Protein Dried—Mulford, Flaxseed Protein Dried—Mulford, Friedlander Bacillus Protein Dried—Mulford, Goose Feather Protein Dried—Mulford, Gonococcus Bacillus (Polyvalent) Protein Dried—Mulford, Guinea-Pig Hair Protein Dried—Mulford, Horse Dander Protein Dried—Mulford, Horse Serum Protein Dried—Mulford, Influenza Bacillus Protein Dried—Mulford, Kapok Protein Dried—Mulford, Lamb Protein Dried—Mulford, Lettuce Protein Dried—Mulford, Lobster Protein Dried—Mulford, Mackerel Protein Dried—Mulford, Meningococcus Bacillus (Polyvalent) Protein Dried—Mulford, Micrococcus Catarrhalis Bacillus Protein Dried Mulford, Oat Protein Dried—Mulford, Onion Protein Dried—Mulford, Orange Protein Dried—Mulford, Orris Root Protein Dried—Mulford, Oyster Protein Dried—Mulford, Paratyphosus Bacillus "A" Protein Dried—Mulford, Paratyphosus Bacillus "B" Protein Dried—Mulford, Pertussis Bacillus (Polyvalent) Protein Dried—Mulford, Pea Protein Dried—Mulford, Peanut Protein Dried—Mulford, Pepper (Black) Protein Dried—Mulford, Pneumococcus Bacillus (Polyvalent) Protein Dried—Mulford, Pork Protein Dried—Mulford, Potato Protein Dried—Mulford, Rabbit Hair Protein Dried—Mulford, Rice Protein Dried—Mulford, Rice Powder (Polish) Protein Dried—Mulford, Rye Protein Dried—Mulford, Salmon Protein Dried—Mulford, Spinach Protein Dried—Mulford, Squash Protein Dried—Mulford, Strawberry Protein Dried—Mulford, Sheep's Wool Protein Dried—Mulford, Staphylococcus Bacillus (Albus and Aureus) Protein Dried—Mulford, Streptococcus Bacillus (Polyvalent) Protein Dried—Mulford, Sweet Potato Protein Dried—Mulford, Tea Protein Dried—Mulford, Tomato Protein Dried—Mulford, Tobacco Protein Dried—Mulford, Tubercle Bacillus (Human) Protein Dried—Mulford, Tubercle Bacillus (Bovine) Protein Dried—Mulford, Typhosus Bacillus Protein Dried—Mulford, Veal Protein Dried—Mulford, Walnut Protein Dried—Mulford, Wheat Protein Dried—Mulford.

Protein Extracts—Mulford
Almond Protein Extract—Mulford, Apple Protein Extract—Mulford, Asparagus Protein Extract—Mulford, Banana Protein Extract—Mulford, Barley Protein Extract—Mulford, Bean (Lima) Protein Extract—Mulford, Bean (Navy) Protein Extract—Mulford, Bean (String) Protein Extract—Mulford, Beef Protein Extract—Mulford, Beet Protein Extract—Mulford, Buckwheat Protein Extract—Mulford, Cabbage Protein Extract—Mulford, Cantaloupe Protein Extract—Mulford, Cat Hair Protein Extract—Mulford, Cauliflower Protein Extract—Mulford, Celery Protein Extract—Mulford, Chicken Protein Extract—Mulford, Chicken Feather Protein Extract—Mulford, Cattle Dander Protein Extract—Mulford, Clam Protein Extract—Mulford, Cocoa Protein Extract—Mulford, Codfish Protein Extract—Mulford, Coffee Protein

Extract—Mulford, Coli Bacillus (Communis) Protein Extract—Mulford, Corn Protein Extract—Mulford, Cucumber Protein Extract—Mulford, Diphtheroid (Polyvalent) Bacillus Protein Extract—Mulford, Dog Hair Protein Extract—Mulford, Dysentery Bacillus (Polyvalent) Protein Extract—Mulford, Eggplant Protein Extract—Mulford, Egg White Protein Extract—Mulford, Egg Yolk Protein Extract—Mulford, Flaxseed Protein Extract—Mulford, Friedlander Bacillus Protein Extract—Mulford, Goose Feather Protein Extract—Mulford, Gonococcus Bacillus (Polyvalent) Protein Extract—Mulford, Guinea-Pig Hair Protein Extract—Mulford, Horse Dander Protein Extract—Mulford, Horse Serum Protein Extract—Mulford, Influenza Bacillus Protein Extract—Mulford, Kapok Protein Extract—Mulford, Lamb Protein Extract—Mulford, Lettuce Protein Extract—Mulford, Lobster Protein Extract—Mulford, Mackerel Protein Extract—Mulford, Meningococcus Bacillus (Polyvalent), Protein Extract—Mulford, Micrococcus Catarrhalis Bacillus Protein Extract—Mulford, Milk Protein Extract—Mulford, Mushroom Protein Extract—Mulford, Orange Protein Extract—Mulford, Orris Root Protein Extract—Mulford, Oyster Protein Extract—Mulford, Paratyphosus Bacillus "A" Protein Extract—Mulford, Paratyphosus Bacillus "B" Protein Extract—Mulford, Pertussis Bacillus (Polyvalent), Protein Extract—Mulford, Pea Protein Extract—Mulford, Peanut Protein Extract—Mulford, Pepper (Black) Protein Extract—Mulford, Pneumococcus Bacillus (Polyvalent) Protein Extract—Mulford, Pork Protein Extract—Mulford, Potato Protein Extract—Mulford, Rabbit Hair Protein Extract—Mulford, Rice Protein Extract—Mulford, Rice Powder (Polish) Protein Extract—Mulford, Rye Protein Extract—Mulford, Salmon Protein Extract—Mulford, Spinach Protein Extract—Mulford, Squash Protein Extract—Mulford, Strawberry Protein Extract—Mulford, Sheep's Wool Protein Extract—Mulford, Staphylococcus Bacillus (Albus and Aureus) Protein Extract—Mulford, Streptococcus Bacillus (Polyvalent) Protein Extract—Mulford, Sweet Potato Protein Extract—Mulford, Tea Protein Extract—Mulford, Tomato Protein Extract—Mulford, Tubercle Bacillus (Human) Protein Extract—Mulford, Tubercle Bacillus (Bovine) Protein Extract—Mulford, Typhosus Bacillus Protein Extract—Mulford, Veal Protein Extract—Mulford, Walnut Protein Extract—Mulford, Wheat Protein Extract—Mulford.

Parke, Davis & Co.
- Mercurosal Solution.
- Neo-Silvol Ointment 5 per cent.
- Neo-Silvol Vaginal Suppositories.
- Scarlet Fever Streptococcus Antitoxin Concentrated (Globulin)—P. D. & Co.

Sharp & Dohme, Inc.
- Caprokol (Hexylresorcinol—S. & D.), 2½ per cent Solution in Olive Oil.

E. R. Squibb & Sons
- Insulin—Squibb, 10 Units, 10 c.c.
- Insulin—Squibb, 20 Units, 10 c.c.
- Insulin—Squibb, 40 Units, 10 c.c.
- Insulin—Squibb, 80 Units, 10 c.c.
- Smallpox (Variola) Vaccine (Glycerinated), 1 Tube..
- Tetanus Antitoxin Purified, 20,000 Units.

Standard Chemical Co.
- Radon—Standard Chemical Co.

Winthrop Chemical Co.
- Sajodin Tablets, 1 Grain.

NEW AND NON-OFFICIAL REMEDIES.

Pituitary Extract Obstetrical—Merrell.—A slightly acid aqueous solution containing the water soluble principle or principles of the fresh posterior lobe of the pituitary body of cattle, preserved with 0.5 per cent of chlorbutanol. It is standardized so that 1 c.c. has an activity on the isolated uterus of the virgin guinea pig corresponding to not less than 80 per cent nor more than 120 per cent of that produced by 9.005 Gm. of standard, defatted, dried powdered posterior lobe of the pituitary gland of cattle. For a discussion of the actions and use of pituitary solution, see Pituitary Gland (New and Non-official Remedies, 1925, p. 260). Pituitary extract obstetrical—Merrell is marketed in ampules containing 0.5 c.c. and 1 c.c. The Wm. S. Merrell Co., Cincinnati.

Pituitary Extract Surgical—Merrell.—A slightly acid, aqueous solution containing the water soluble principle or principles of the fresh posterior lobe of the pituitary body of cattle, preserved with 0.5 per cent of chlorbutanol. It is standardized so that 1 c.c. has an activity on the isolated uterus of the virgin guinea pig corresponding to not less than 80 per cent nor more than 120 per cent of that produced by 0.01 Gm. of standard, defatted, dried, powdered posterior lobe of the pituitary gland of cattle. For a discussion of the actions and uses of Pituitary solution, see Pituitary Gland (New and Non-official Remedies, 1925, p. 260). Pituitary solution surgical—Merrell is marketed in ampules containing 1 c.c. The Wm. S. Merrell Co., Cincinnati.

Solarson.—A 1 per cent solution of ammonium heptenchlorarsonate rendered isotonic by the addition of sodium chloride. Solarson contains from 0.255 to 0.275 Gm. of arsenic (As) in 100 c.c. Experimental evidence indicates that the arsenic of solarson is readily liberated in the system and is well utilized. It is claimed that solarson has an advantage over the cacodylates because its arsenic is better utilized, and over the arsenilates in that subcutaneous and intramuscular injection produce less pain and are less liable to produce toxic effects. Solarson is used as a means of obtaining arsenic effects in the treatment of anemia, chlorosis, malaria, neuroses and dermatoses. Solarson is supplied in ampules containing 1.2 c.c. Winthrop Chemical Co., Inc., New York.

Bismosol.—A solution of potassium sodium bismuthotartrate (containing 35 per cent. bismuth), 10 Gm.; piperazine, 0.3 Gm., in an aqueous solution of glucose sufficient to make 100 c.c. Bismosol is proposed as a means of obtaining the systemic effects of bismuth in the treatment of syphilis (Bismuth Compounds, New and Non-official Remedies, 1925, p. 73). Bismosol is administered intramuscularly. It is supplied in ampules containing 1 c.c. Powers-Weightman-Rosengarten Co., Philadelphia.

Caprokol (Hexylresorcinol—S. & D.), 2½ Per Cent Solution in Olive Oil.—A solution of caprokol 2.5 parts in olive oil to make 100 parts. For a discussion of the actions, uses and dosage of caprokol, see Jour. A. M. A., May 2, 1925, p. 1338. Sharp & Dohme, Baltimore.

Sajodin Tablets, 1 Grain.—Each tablet contains sajodin, 1 grain. For a discussion of the actions, uses and dosage of sajodin, see New and Non-official Remedies, 1925, p. 182. Winthrop Chemical Co., New York.

Scarlet Fever Streptococcus Antitoxin Concentrated (Globulin)—P. D. & Co.—A scarlet fever strep-

tococcus antitoxin (Jour. A. M. A., May 2, 1925, p. 1338), prepared from the serum of horses treated with subcutaneous injection of toxic filtrates from cultures of scarlet fever streptococci and also with intravenous injections of the streptococci themselves. Each c.c. neutralizes from 35,000 to 40,000 skin test doses of scarlet fever toxin. The product is marketed in packages of one syringe containing 2.5 c.c. and in packages of one syringe containing 10 c.c. Parke, Davis & Co., Detroit. (Jour. A. M. A., Aug. 8, 1925, p. 437).

Diphtheria Toxin-Antitoxin Mixture 0.1 L+.—A diphtheria toxin-antitoxin mixture (New and Non-official Remedies, 1925, p. 333), each c.c. containing 0.1 lethal dose of diphtheria toxin neutralized with the required amount of diphtheria antitoxin. Marketed in packages of three 1 c.c. vials; in packages of one 30 c.c. vial; in packages of ten vials, each containing three doses. Eli Lilly & Co., Indianapolis.

Typhoid Mixed Vaccine, Prophylactic and Therapeutic. (New and Non-official Remedies, 1925, p. 360). This is also marketed in packages of three 1 c.c. vials. Eli Lilly & Co., Indianapolis.

Germicidal Tablets of Potassio-Mercuric Iodide.—P. D. & Co.—Tablets containing potassium mercuric iodide, potassium iodide and sodium bicarbonate, colored blue. (For a discussion of the actions, uses and dosage of potassium mercuric iodide, see New and Non-official Remedies, 1925, p. 239). This product is supplied in two forms: germicidal discs of potassio-mercuric iodide No. 2—P. D. & Co., each tablet representing mercuric iodide ⅜ grain, potassium iodide ⅜ grain and sodium bicarbonate 16 grains, and germicidal discs of potassium mercuric iodide 1½ grains, potassium iodide 1½ grains and sodium bicarbonate 45 grains. Parke, Davis & Co., Detroit, (Jour. A. M. A., Aug. 15, 1925, p. 517).

Smallpox (Variola) Vaccine (Glycerinated). (New and Non-official Remedies, 1925, p. 342).—This is also marketed in packages of one tube. E. R. Squibb & Sons, New York.

Tetanus Antitoxin—Lilly (New and Non-official Remedies, 1925, p. 333).—This is also marketed in syringes containing 10,000 units. Eli Lilly & Co., Indianapolis.

Tetanus Antitoxin (Purified) (New and Non-official Remedies, 1925, p. 333).—This is also marketed in packages of 20,000 units. E. R. Squibb & Sons, New York.

Novarsenobenzol-Billon, 0.15 Gm. Ampules.—Each ampule contains 0.15 Gm. of novarsenobenzol-Billon (New and Non-official Remedies, 1925, p. 50). Powers-Weightman-Rosengarten Co., Philadelphia.

Novarsenobenzol-Billon, 0.3 Gm. Ampules.—Each ampule contains 0.3 Gm. of novarsenobenzol-Billon (New and Non-official Remedies, 1925, p. 50). Powers-Weightman-Rosengarten Co., Philadelphia.

Novarsenobenzol-Billon 0.45 Gm. Ampules.—Each ampule contains 0.45 Gm. of novarsenobenzol-Billon. (New and Non-official Remedies, 1925, p. 50). Powers-Weightman-Rosengarten Co., Philadelphia.

Novarsenobenzol-Billon 0.75 Gm. Ampules.—Each ampule contains 0.75 Gm. of novarsenobenzol-Billon (New and Non-official Remedies, 1925, p. 50). Powers-Weightman-Rosengarten Co., Philadelphia.

Anti-Anthrax Serum—Lederle (New and Non-official Remedies, 1925, p. 336).—This is also marketed in packages of one 20 c.c. vial. Lederle Antitoxin Laboratories, New York.

Tuberculin Pirquet Test ("T. O.")—Lederle (New and Non-official Remedies, 1925, p. 347).—This is also marketed in packages containing 10 capillary tubes and in packages containing 25 capillary tubes. Lederle Antitoxin Laboratories, New York.

Pasteur Antirabic Preventive Treatment (Harris Modification)—Lilly (New and Non-official Remedies, 1925, p. 343).—Supplied in emulsion in syringes ready for use. The package containing the first seven doses is sent from the nearest Lilly depot; the second package containing the last seven doses is sent out from the home office. Eli Lilly & Co., Indianapolis. (Jour. A. M. A., August 22, 1925, p. 584).

PROPAGANDA FOR REFORM.

The Parathyroid Hormone.—The recently reported studies make it more than likely that suitably prepared parathyroid extracts contain a substance or substances that will afford complete replacement therapy in the case of the totally parathyroidectomized dog. The methods thus far developed indicate that any extract of fresh ox gland that has been made by a process of weak acid hydrolysis and is sufficiently concentrated contains more or less of the active principle. It has been proposed to use as a provisional unit of potency one one-hundredth of the amount of extract that will produce an average increase of 5 mg. in the content of calcium in the blood serum of the normal dog of approximately 20 kg. of body weight over a period of 15 hours. There should be no haste in a possible human application of the parathyroid hormone. Injection of even very small amounts frequently repeated have invariably proved fatal to animals when the injections were continued. (Jour. A. M. A., Aug. 8, 1925, p. 441).

Calcium in Tuberculosis.—Calcium salts have been administered in the treatment of tuberculosis for various alleged reasons: to remedy calcium deficiency; to lessen inflammatory exudate; to favor calcification of lesions, and to lessen sweating and diarrhea. But calcium is not considered as an essential remedy by critical students of the subject. (Jour. A. M. A., Aug. 15, 1925, p. 539).

Hind's Honey and Almond Cream.—According to an analysis reported in 1914, Hind's Honey and Almond Cream is essentially an emulsion containing alcohol, 7.28 per cent; glycerin, 5.79 per cent; partly saponified beeswax, 5.98 per cent; crystallized borax, 1.49 per cent; perfumed with oil of bitter almonds. (Jour. A. M. A., Aug. 15, 1925, p. 539).

Tuberculin in Tuberculous Adenitis.—Tuberculin seems to be indicated when the disease is strictly localized, and especially in involvement of the cervical lymph gland. Its administration is carried on in the same way as in the tuberculin treatment for other purposes with doses that produce a slight local reaction but fall short of a general one. (Jour. A. M. A., August 15, 1925, p. 539).

Benzyl-Viburnum Compound Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Benzyl-Viburnum Compound (Benzyl-Viburnum Laboratory, Washington, D. C.), is marketed in the form of capsules. Each capsule is stated to contain 2 grains of benzyl succinate, viburnum opulus and helonin and powdered ginger root. The name "helonin" has been applied to an extractive preparation derived from false unicorn (Helonias dioica), of indefinite composition. Benzyl-Viburnum Compound is proposed for the treatment of dysmenorrhea and "true asthma." Benzyl esters have been found to be without value in asthma. Cramp bark (Viburnum opulus) and false unicorn (Helonias dioica), have long been constituents of proprietary "female" remedies, but there is no evidence of their efficiency. The trade package contains recommendations for the use of the preparation in painful men-

struation and the advertising suggests that the bottle of the capsules may be carried in the shopping bag. The Council concludes that Benzyl-Viburnum Compound is an indefinite complex and irrational mixture, which is marketed with unwarranted therapeutic claims and in a way to encourage its indiscriminate and harmful use by the public. (Jour. A. M. A., August 22, 1925, p. 628).

Supsalves and Mersalv.—Supsalvs are arsphenamin suppositories put out by the Anglo-French Drug Co., and Mersalv is stated by the same firm to be a 10 per cent ointment of metallic mercury. In 1920, the Council on Pharmacy and Chemistry reported unfavorably on Supsalvs, because there was no acceptable evidence of the efficiency of arsphenamin administered rectally. Since then the inefficiency of the rectal administration of arsphenamin has been demonstrated by controlled clinical trials. The identity of the ingredients that form the base of Mersalv is not declared by the manufacturer. There is no good evidence to show that Mersalv—or any other proprietary mercurial preparation—is therapeutically superior to the official ointment of mercury. (Jour. A. M. A., August 22, 1925, p. 630).

Long Island Journal Adopts Council Standards.—Slowly but surely the work of the Council on Pharmacy and Chemistry is receiving recognition. The resolution endorsing the Council's work signed by every member of the house of delegates at the 1916 session is only the official record of the increasing support and encouragement being given by individual members of the profession. Practically every medical journal of standing refuses today to accept advertisements of pharmaceutic preparations that have not met the Council's requirement. This standard has been adopted by all of the official organs of the various state medical associations (with the notable exception of the Illinois Medical Journal). The difficulty of financing a strictly professional journal is no doubt in a great measure responsible for the failure of some publications to close their advertising columns to any but Council accepted pharmaceutic products. That the best of these journals desire to support the Council is shown by a letter from the business manager of the Long Island Medical Journal, announcing the arrival of the hopefully anticipated time when this publication can afford to solicit advertising only from manufacturers of products that met the Council's requirements. Henceforth, only such pharmaceutic products as are accepted for inclusion in New and Non-official Remedies will be advertised in the Long Island publication. (Jour. A. M. A., August 29, 1925, p. 681).

Another Mail-Order Rejuvenating Concern Declared a Fraud.—For two or three years past a mail-order concern calling itself the "Melton Laboratories, Manufacturing Chemists," has been defrauding the public from Kansas City, Mo., in the sale of an alleged sex rejuvenator. The "Melton Laboratories" were not laboratories, and the "manufacturing chemists" were neither chemists nor manufacturers. The thing was a crude mail-order swindle operated chiefly by Harold Nelson Stunz. The nostrum put out by the Melton Laboratories was called "Korex." Later, Stunz had two additional drugs added to Korex and put it out under the name "Hiobin" and created a paper organization called the "Hiobin Co." Then Stunz brought out a "Kidney Cure" that he called "Renex." This was sold by the Renex Co., another "paper concern." All three of these nostrums came from the same address, but the public had no means of knowing this, as the addresses were camouflaged to cover this fact. On August 13, 1925, the Melton Laboratories (H. M. Stunz, manager), the Hiobin Co., and the Renex Co., had a fraud order issued against them debarring them from the use of the mails. (Jour. A. M. A., August 29, 1925, p. 694).

Book Announcements

Allergy. Asthma, Hay Fever, Urticaria and Allied Manifestations of Reaction. By WILLIAM W. DUKE, Ph.B., M. D., Kansas City, Missouri, St. Louis. The C. V. Mosby Company. 1925. 8vo. 339 pages with 75 illustrations. Cloth. Price, $5.50.

Bone Sarcoma. An Interpretation of the Nomenclature Used by the Committee on the Registry of Bone Sarcoma of the American College of Surgeons. By E. A. CODMAN, M. D., Registrar. Paul B. Hoeber, Inc., New York. 1925. 12mo of 93 pages, with 24 illustrations. Cloth. Price, $2.00.

Treatment of Kidney Diseases and High Blood Pressure. By FREDERICK M. ALLEN, M. D. Part I. Practical Manual for Physicians and Patients. The Physiatric Institute, Morristown, N. J. 12mo. 210 pages.

Feeding and the Nutritional Disorders in Infancy and Childhood. By JULIUS H. HESS, M. D., Professor and Head of the Department of Pediatrics, University of Illinois, College of Medicine; Chief of Pediatric Staff, Cook County Hospital; Member of Advisory Board, Children's Bureau, Department of Labor, Washington, D. C. Fourth Revised and Enlarged Edition. Philadelphia. F. A. Davis Company, Publishers. 1925. 8vo. of 556 pages, illustrated with 42 engravings in the text and one full-page colored plate. Cloth. Price, $4.50 net.

The Medical Follies. An Analysis of the Foibles of Some Healing Cults, Including Osteopathy, Homeopathy, Chiropractic, and the Electronic Reactions of Abrams, with Essays on the Antivivisectionists, Health Legislation, Physical Culture, Birth Control, and Rejuvenation. By MORRIS FISHBEIN, M. D., Editor of the Journal of the American Medical Association. New York. Boni & Liveright. 1925. 8vo. of 223 pages. Cloth. Price, $2.00.

An Introduction to Objective Psychopathology. By G. V. HAMILTON, M. D., Director of Psychobiological Research, Bureau of Social Hygiene. Inc., New York City, N. Y. With Foreword by ROBERT M. YERKES, Ph.D., LL.D., Professor of Psychology, Yale University. St. Louis. The C. V. Mosby Company. 1925. 8vo. 354 pages. Cloth. Price, $5.00.

Boys' and Girls' Camps, N. H.

New Hampshire now requires that all camps for boys and girls in the State shall be licensed by the State board of health. A license is granted only if the camp is kept in a sanitary state and has a safe water supply.

Diphtheria Prevention, Philadelphia.

The Philadelphia Department of Public Health announces a campaign of public education for the immunization of all school children in the city against diphtheria.

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Editorial

The Subject of Birth Control.

Much is said and written, loosely and unconsideredly, of the modern idea of birth control. Any discussion of the subject is a daring matter and there always arises the question if in controlling the birth of human beings we are not assuming a divine perogative.

Fifty years ago both the higher and lower intellectual types raised large families. Today the lower types are having from eight to twelve children per couple, while the higher intellectual types are having less than four. This decline in the birth rate of the best stock leaves the future of America in the hands of the lower type of citizens.

Just what does birth control mean? Does it include the use of preventive measures to conception? Does it include continence? Does it include abortion? Does it include Spartan infanticide? Does it include preadolescent or postadolescent sterilization? Then, too, whose birth is to be controlled? Only the defectives, the criminals and the diseased, or may it not become fashionable for Jones to have his wife sterilized before or after marriage, or Mrs. Smith her husband?

And who is to control the controllers? The governor, the legislature, the doctor, the lawyer, the butcher, the baker, the unmarried or the married, or a conglomerate board of these elements? Might not politics creep into the matter as it has into the church, into the jail, into the counting house and into the mart?

Should we not take into consideration that the very parents who have given the world defectives have also given the world some of its most brilliant and useful citizens. Shall we stop the propagation of both? Queen Elizabeth's father was a syphilitic and a murderer and her mother a prostitute but we are proud of the Elizabethan age of culture and we feel that if it had not been for Elizabeth the English speaking colony in America would probably not have succeeded.

It is impossible at the present time to come to a definite conclusion about what good may come out of birth control, if any. The wisest measure would seem to make Public Health, now under the Treasury Department, a regular department of the government so that the subject of birth control and other subjects may be more adequately studied. Philanthropists could do no greater service than to establish a foundation for the study of the prevention of nervous and mental diseases for there are now said to be more beds in insane and feebleminded institutions than there are in all the other hospitals of the United States added together. With a problem that looms as large as this one, however, results should not be expected until after long, patient and diligent investigation and experimentation.

B. R. T.

Diabetes After Three Years of Insulin.

Diabetes appears to be increasing in incidence in spite of the widespread popular interest aroused by the discovery and publicity given the use of insulin. The increase in the number of cases may not be due, certainly not altogether, to the increase in the total number of cases, but to the discovery of existing cases that had been unknown. Many cases have recently been found among women; formerly, men appeared to have the disease relatively in greater number than women. This may be due to (a) the increase of obesity among women, probably caused by the excessive use of candy, soft drinks, and "parties;" (b) the more frequent urinary examinations among women than formerly, resulting from the desire to reduce obesity; (c) health insurance examinations on women in business life offering more frequent opportunity for discovery of diabetes.

The widespread occurrence of diabetes and its increase of known incidence should make

its consideration more or less interesting to practitioners, especially so, since the use of insulin has advanced its treatment to a more scientific position in practice.

Before Insulin.

It is but fair to say that certain cases of diabetes were as well in hand before as they are now, after insulin.

Cases of diabetes in the adult without complications, having a tolerance for carbohydrates of 100 to 150 grams, were easily managed by dietary treatment. In these cases, at the present time, we do not use insulin. In the gradual building up of diet, in the search for carbohydrate tolerance, under the general plan, as followed in the Allen treatment, carbohydrate mechanism utilizes long stored glycogen in liver and muscle, and brings about a metabolic adjustment in the patient, producing a sugar-free urine, a moderate blood-sugar and a well-being in the patient. The educational advantages of daily instruction of the patient in the method pursued in determining the carbohydrate tolerance, in the value and nature of the foods, in the meaning and purpose of "carbohydrate," "protein" and "fat" in the diet and the caloric worth of these food elements to the body, tend to produce, not only a patient free of urinary sugar, but also a patient interested in the health problem under consideration.

This has been our experience in mild cases. In these cases insulin is not given. These patients often come expecting insulin, and they express surprise, and sometimes regret, at not receiving insulin treatment. Usually, considerable patience is required to overcome the impatience of these patients. An explanation that insulin does not cure diabetes, that it is an agent to help in cases incapable of producing enough "private" insulin, and that its most potent, and really most important, application is in cases of a severe grade, seems to right the matter in these patients' minds. After this, co-operation is more easily obtained in these patients.

A considerable number of our cases of diabetes, some of whom have been under our care for ten years, have never received insulin. A few cases of this type may have received an initial treatment of insulin with the diet, in order to bring them more quickly to a lower blood-sugar level, but none have gotten prolonged insulin treatment. The treatment of diabetes by diet, without insulin, in a large proportion of mild diabetes is satisfactory. Although it is the third year since this widely advertised, potent and useful remedy has been introduced and used, many cases, to repeat, are never given a dose. If given any, it is because of the exigencies of the individual case. It is our belief that insulin should not be used unless it is emphatically needed. The reasons are obvious why insulin should not be used in cases that can make enough "private" insulin.

Insulin.

Insulin, however, is a potent remedy. It is preeminently an epoch in diabetes. Its discovery and perfection mark an outstanding event in the history of medicine. In a thousand years of diabetes, no therapeutic event exceeds its discovery in importance. So, the year nineteen hundred and twenty-two is "the year of insulin." In severe cases of diabetes and complications, insulin has an important place.

It is not our purpose to discuss dosage of insulin in detail. We are often asked how we give insulin. We must say that we have no fixed plan for all cases; each case seems to require individual method, more or less. There are many things that influence the method. If the patient is in coma and in the hospital, large doses are given, with repeated examinations of blood and urine for sugar determinations. If the patient is a severe type and is able to remain in the hospital for a reasonable time, gradual elimination of fats and protein and carbohydrate is followed until complete fast is given. Then building up the diet is begun, and insulin is only used if the carbohydrate tolerance is too low. If the case requires more vigorous treatment, insulin may be given with a modified diet. Adjustment and building up with insulin is practiced to a maintenance point. There are many plans of administration, but no one has devised a better one than Joslin, although there are numbers of others with definite formulae for computation.

Insulin in Juvenile Diabetes.

In diabetes of childhood, we feel that insulin assumes heroic values. Before the era

of insulin memories of the tragic course of diabetes in children may be said to be ghastly. We recall especially two young girls whose downward course was unabated in spite of every known dietary measure and plan of management. The efforts of the mother, father and family to assuage the appetite and at the same time to adhere to the orders and directions in diet were indeed pathetically futile. These cases came gradually but surely to diabetic coma. After insulin came, the diabetic child seemed to get a better chance: this has been our experience, and no doubt yours. The arrest of the downward course of the disease under dietary and insulin treatment was the first reaction, as against the persistent downward progress of severe juvenile diabetes before insulin came. One felt, as insulin held in abeyance untoward clinical and laboratory findings, that, at least, a therapeutic agent was at hand capable of staying the disease for a time. Again, as one was able with insulin to build up carbohydrate tolerance and drive away signs of acidosis, thus, witnessing growth and increase of weight, one was more impressed with the potency of insulin for diabetes of youth. An instance of the power of insulin in connection with diet is worth reciting: The child was in coma when brought to the hospital; and with insulin, fruit juice and glucose, the ketosis was relieved. The patient's tolerance and a balanced ration for maintenance and growth being the next problem, we were, by inadvertence or possibly in an effort too quickly to reach a standardization of the patient's diet on a high fat basis, surprised to find the patient, during the course of treatment, entering acute acid intoxication, as shown by urine, mental stupor and dyspneic breathing. Again, insulin administered, with a readjustment of diet, restored this patient to the safety zone. This little patient was given hospital treatment from October 14, to December 2, 1923. On entering the hospital, she weighed 38 pounds; blood-sugar was 150 mgm. per 100 c.c. of blood; acetone and diacetic acid were heavy, and sugar was strongly positive, with clinical symptoms of coma. When heard from in June, 1924, patient was weighing 44¼ pounds, was on a diet of 65 grams carbohydrates, 50 grams protein, and 30 grams fat; before each meal she was receiving 6 units of insulin hypodermically. The urine was free of acetone and diacetic acid, but positive for sugar. If insulin had not been given, this patient would have died, we believe, within thirty-six hours. A letter from the sister of the patient, dated August 1, 1925, says, "Bessie has been getting along very nicely, has been steadily gaining, and looks the picture of health. She attended school last winter and got along nicely with her work. At present, she is taking 4 minims (10-2/3 units) of insulin—U-40 strength—three time a day."

In children, diabetes grows worse; consequently, insulin and diet adjustment are required even in mild cases. Small doses in repeated administrations, properly timed before the feedings, give the best results in juvenile cases. In this way, islets may be rescued and with the growth and development of the child new islets may increase the insulin output of the growing pancreas.

Insulin in Coma.

As in juvenile and severe diabetes, insulin in coma stands out as a master therapeutic agent. Before insulin came, coma was amenable, at times, to a well rounded therapeutic attack in most cases in the adult. The liberal use of water, rest in bed, warmth, evacuation of bowels, administration of abundance of orange juice, or glucose, possibly sodium bicarbonate and whiskey, were routine measures, in connection with cardiac and renal stimulants, in bringing these cases around. Often, however, these measures failed. We recall a young married woman who attempted to give herself the fasting treatment after she was told she had diabetes. She was found in a diabetic coma. No response was gotten from vigorous treatment. Had we possessed insulin, it is probable that the perverted fat metabolism might have been stopped and carbohydrate combustion lighted again, and the patient brought, thus, out of the intoxication of a profound acidosis.

The first case on whom we used insulin was one of coma on November 16, 1922. A young man, with blood-sugar of 426 mgms. per 100 c.c. of blood, and marked ketosis, was given 8 units of insulin every hour; then after a rest of ten hours, was given 10 units every hour for thirteen hours, with a rest of twelve hours; and then 10 units every hour until urine-sugar began to decrease and blood-sugar

fell to 168 mgm. Clinical symptoms cleared and urine became free of diacetic acid and acetone. From this he was put upon a low maintenance diet. This patient died a year afterwards from an erysipelas.

In coma insulin is used in large doses. Repeated blood-sugar determinations and urine examinations are made during the intensive administration. Usually, coma yields. One case, we recall, in whom it was a question of whether or not there was a cerebral embolus with unconsciousness, appears to have failed. The patient was living in an adjoining county and laboratory assistance was not available.

Before the days of insulin the pathetic death by acidosis was a spectre ever threatening; now, in the time of insulin, one may feel reassured and well armed. Death by diabetic coma now should occur rarely, if at all.

News Notes

Come One, Come All! To the Richmond Meeting.

Almost as you read this issue of the journal, members of the Medical Society of Virginia are gathering in Richmond for its fifty-six annual meeting. All indications point to a well attended and interesting meeting, and every member of the Society is cordially invited to attend.

We have introduced an innovation this year in the form of medical moving pictures. The invited guests are men whom you will want to hear and meet. Wives and daughters of members will be entertained while the scientific sessions are in progress and diversions will also be offered members. Collge alumni "get-togethers" in the form of dinners on Thursday evening are being arranged.

Dr. Wendell C. Phillips, president-elect of the American Medical Association will also address the members.

Arrangements have been made whereby the golf tournament will be held at Hermitage Club, rather than at the Country Club of Virginia, as previously announced.

This is your meeting. You will be more interested in everything pertaining to Society activities if you attend meetings. Now is the time to start the habit.

The dates are October 13, 14, 15, and 16. The place Richmond.

The Pediatric Clinic of the University of Virginia Hospital

Opened its new building on September 21st.

It is proposed to conduct a General Child Welfare Clinic. Trained public health Pediatric nurses, student nurses and medical students will be employed, all of whom will not only work in the Clinic Building, but will do follow-up work in the field. It is proposed to start this work in the territory immediately surrounding the University Hospital, working out radially as progress is made, ultimately reaching the mountain people of the western part of this State. These people, it is well known, are in very great need of instruction in personal hygiene and preventive measures generally. This is particularly true of the children.

A further aim of this work will be to make an intensive study of these people sociologically and anthropologically. It is hoped that definite contributions will be made to pediatrics as well as sociology and anthropology, through this beginning. It is estimated that this work will cost $10,000.00 a year for the first three years, and this amount is already in hand. Funds have been secured largely through the Commonwealth Fund of New York, but other sources have been drawn upon, largely private individuals, and the ladies of the University Hospital League raised a large sum of money for this work from the people of Charlottesville. A new building has been erected to house these activities, and it is believed that a new era in pediatrics, not only in Virginia, but in the South, has been inaugurated.

This work is under the direction of Dr. L. T. Royster, assisted by Dr. W. W. Waddell.

To Teach Preventive Medicine at Medical College of Virginia.

Dr. Arthur D. Knott, for several years in charge of the public health work in Accomac County, Virginia, under the direction of the State Board of Health, has accepted the position of acting professor of preventive medicine at the Medical College of Virginia. He takes the place of Dr. E. C. Levy, who secured an indefinite leave of absence from the College that he might become chief health officer of Tampa, Florida. Dr. Knott received his degree as doctor of public health at Johns Hopkins University, Baltimore, and made a most creditable

record as a result of his work in Accomac County.

Dr. Robert P. Cooke,

Front Royal, Va., who has been connected with the army re-mount station at that place, has been secured to succeed Dr. A. D. Knott in charge of the health work in Accomac County, Va., under the auspices of the State Board of Health. Dr. Cooke has had a good deal of experience in connection with health work and was associated with Dr. Walter Reed in his fight against yellow fever. He is expected to enter upon his new duties the latter part of October.

The American Roentgen Ray Society

Held its annual meeting at the Mayflower Hotel, Washington, D. C., September 22-25, inclusive. The attendance was good, and scientifically and socially the meeting was excellent. There was a golf tournament at the Congressional Country Club, which was followed by a buffet luncheon, and Mrs. Coolidge tendered a reception to the ladies. One evening was given over to a banquet and, in an "after dinner" talk, Frederick William Wile entertained the audience with "Behind the Scenes at Washington." This was followed by a ball. The Caldwell lecture in memory of Dr. Eugene Caldwell, X-ray martyr, was delivered by Dr. James Ewing, of New York City. His address on "Tissue Reaction to Radiation" was illustrated and was a masterpiece.

The Leonard prize of $1,000, given periodically, in competition for the best paper portraying original work in X-ray, was awarded this year in the form of two prizes: The first prize of $600 went to Dr. Evarts Graham and his co-workers, Drs. W. H. Cole and G. H. Copher, of St. Louis, for their work in the study of the gall-bladder; the second prize of $400 was awarded G. Failla, Ph.D., and his co-workers at Memorial Hospital, New York City, for their study pertaining to measurement and dosage in radium treatment.

It was decided to change the time of meeting, time for the next convention being set for the Spring of 1926 in Detroit, Mich. Officers are: President, Dr. Thomas A. Groover, Washington, D. C.; President-elect, Dr. Russell D. Carman, of Mayo Clinic, Rochester, Minn.; vice-presidents, Dr. P. F. Butler, Boston, Mass., and Dr. Wm. M. Doughty, Cincinnati; secretary, Dr. Charles L. Martin, Dallas, Texas; treasurer, Dr. Wm. A. Evans, Detroit, Mich.

Dr. and Mrs. Stephen H. Watts

Have returned to their home at University, Va., after a visit to New York City.

Dr. Charles H. Moncure

Has been re-elected health officer of Orange, Va.

Dr. and Mrs. A. B. Householder

Have returned to their home at Lovettsville, Va., after a motor trip to New York, Niagara, and other places of interest.

Dr. William H. Parker,

For six years a member of the City School Board of Richmond, Va., has tendered his resignation, owing to the fact that he has moved from the district from which he was named.

Dr. Joseph A. McGuire,

Norton, Va., has been appointed by Governor Trinkle as a member of the State Board of Health of Virginia, to fill the unexpired term of Dr. H. M. Miles, of Norton, deceased.

Dr. and Mrs. Beverley Wellford

Have returned to their home in Richmond, after a visit to Nimrod Hall, Bath County, Va.

Dr. and Mrs. A. T. Finch,

Chase City, Va., returned home about the middle of September, after an extended western trip. They left early in August for Vancouver, B. C., accompanied by their young daughter, Miss Mary Finch, who sailed from that port for Japan, where she enters the foreign missionary field. Dr. and Mrs. Finch returned home by way of San Francisco, and the Yellowstone National Park.

Dr. and Mrs. H. W. Porter

And family returned to their home at Louisa, Va., early last month, after a trip to Canada and points of interest in the Northern states.

The Edmunds Hospital,

Danville, Va., has been undergoing improvements amounting to $10,000 which will add greatly to the comfort and convenience of patients and hospital employees.

Members of Danville Board of Health.

Drs. Samuel Newman, R. W. Garnett, Charles W. Pritchett and R. Bruce James were recently elected members af the Danville, Va., Board of Health.

Married.

Dr. Frank B. Stafford, of the medical staff

of the Blue Ridge Sanatorium, Charlottesville, Va., and Miss Nancy Letitia Morton, superintendent of the Sanatorium, September 4, at the home of the bride in Bluefield, W. Va.

Dr. George H. Long, Luray, Va., and Miss ZeDene Horn, Barnesville, Ga., September 7.

Dr. Lee Spottswood Liggan, Callao, Va., and Miss Alice Elizabeth Hechler, Richmond, September 9.

Dr. Randolph McCutcheon, Fairmont, W. Va., and Miss Gladys Gertrude Lumsden, Richmond, Va., September 19. Dr. McCutcheon is a member of the class of '24, Medical College of Virginia.

Dr. Dempsey Barnes, Proctorville, N. C., and Miss Dorothy Neagle, in Baltimore, Md., September 5. Dr. Barnes graduated from Medical College of Virginia last June, at which time he was appointed one of the interns at Johnston-Willis Hospital, Richmond.

Dr. Berryman Green, Jr., formerly of Virginia and a member of the class of '17, University of Virginia, and Mrs. Alice Gordon, in Denver, Colorado, September 14.

Dr. Churchill Robertson,

Of Salem, Va., has relinquished his private practice in that place and has gone to Saranac Lake, N.Y., prior to affiliating himself with Mt. Regis Sanatorium, Salem, Va.

While away, Dr. Robertson will visit some of the large tuberculosis clinics of the East.

Dr. Harry M. Wallace,

Greenville, Va., has been appointed by the Augusta County Council, as one of its delegates to the National Country Life Association, which will meet in Richmond, October 27-31.

The Southwest Virginia Registered Nurses' Association

Held its annual meeting at the home of Miss Roberta Killinger, in Marion, September 11. Interesting talks were given by several members and the following officers were elected for the ensuing year: President, Miss Carrie Mae Copenhaver, Bristol; vice-president, Miss Rebecca Preston, Meadow View; secretary-treasurer, Miss Irma Fortune, East Radford. Following the meeting, refreshments were served by the Marion nurses.

Dr. Daniel M. Moore,

Recently of Stonega, Va., has moved to Monroe, La., where he has accepted an appointment as roentgenologist to the St. Francis Sanitarium. He entered upon his duties there September 1st.

Dr. G. G. Hankins,

Formerly of Phoebus, Va., who has been assistant resident physician at the Philadelphia General Hospital, for the past eighteen months, has located in Newport News, Va., at 118 Twenty-sixth Street. He will confine his work to the practice of ophthalmology, otology, rhinology and laryngology.

Dr. G. W. Skaggs,

Of the class of '08, Medical College of Virginia, who has been practicing for sometime at Beards Fork, West Va., has located at Page, W. Va., where he will continue his professional work.

The American Public Health Association

Will hold its fifty-fourth annual meeting in St. Louis, Mo., October 19-22, with Hotel Statler as headquarters. Information about this meeting may be obtained of its executive secretary, Mr. Homer N. Calver, 370 Seventh Avenue, New York City.

The Wilmer Eye Institute, Johns Hopkins University,

Was opened October 1st, with sixty beds. Dr. William Holland Wilmer, formerly of Washington, D. C., is director. He, Dr. Cecil H. Bagley and Dr. R. S. Wygodski have given up private practice and will devote their full time to this work.

Dr. Homer Spitler,

Middleburg, Va., was a recent visitor at the home of his brother in Luray, Va.

Dr. F. N. Bowles,

Of Chester, Va., has completed an interne service at Watts Hospital, Durham, N. C., and is now a resident physician at Lying-in Hospital, New York City.

Dr. Arthur D. Ownbey,

Newport News, Va., is taking a post-graduate course at New York Post-Graduate Medical School and Hospital, New York City.

Annual Registration of Physicians Required in Pennsylvania.

A law has been adopted in Pennsylvania which requires that all persons engaged in the practice of medicine or any allied branch of the healing art, in the State of Pennsylvania, shall register as practitioners, with the Board of Medical Education and Licensure in the

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Department of Public Instruction, annually, on or before the first day of January. A penalty is prescribed for those not abiding by the law.

Mrs. William C. Powell,

Petersburg, Va., returned home about the middle of September, after spending the summer in touring Europe. While abroad, Mrs. Powell visited England, Scotland, Holland, Belgium, Germany, Italy, Switzerland and France. She returned by way of Montreal, Canada.

Dr. and Mrs. S. E. Weymouth,

Callao, Va., are home again after a visit to Baltimore.

The Health Food Show

Will be held in Indianapolis, Ind., October 10 to 17, inclusive, under the direction of Dr. E. V. McCollum, of Johns Hopkins University, in connection with the National Dairy Exposition. Many features of unusual interest are promised in connection with this Health Food Show.

Dr. Leta J. White,

Of Richmond, recently visited friends at Callao, Va.

Dr. and Mrs. S. E. Hughes,

Danville, Va., are home again after spending sometime at Asheville, N. C.

Scholarships Available in Post-Graduate Work.

It is announced that scholarships on the Oliver-Rea Foundation for graduate study in medicine are available at the New York Post-Graduate Medical School and Hospital. Inquiries should be addressed to the Dean, 301 East Twentieth Street, New York City.

Dr. and Mrs. A. R. Shands

And daughter, of Washington, D. C. recently visited friends at Appomattox Manor, near Petersburg, Va.

Dr. and Mrs. L. G. Richards

And family, of Roanoke, Va., spent sometime in September with friends at Midlothian, Va. Dr. Richards, who is a member of the Virginia State Amateur Trapshooting Association, entered the annual shoot on Labor Day, and made a good record.

Dr. Robert Glasgow

Was recently re-elected health officer of Lexington, Va.

Dr. W. Calhoun Stirling,

Washington, D. C., was recently appointed as instructor in genito-urinary surgery in Georgetown University Medical School, of that city.

Dr. and Mrs. W. Morrison Robinson,

Richmond, after a short motor trip to points of interest in Virginia and North Carolina, have returned home and are now located at 411 North Boulevard.

New Members of W. Va. Health Council.

Dr. Hugh A. Barbee, Point Pleasant, and Dr. Benj. O. Robinson, Parkersburg, have been appointed by the Governor of West Virginia as new members of the Health Council of that State.

Dr. and Mrs. Burnley Lankford,

Of Norfolk, Va., recently motored to Hot Springs, Va., where Dr. Lankford attended the meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons. They returned home by way of Sweet Briar College, where they visited their daughter, Miss Elizabeth Lankford, who is a student there.

Dr. I. C. Riggin

Has resigned as epidemiologist to the State Board of Health of Virginia, and has accepted the position as health officer of Oberlin, Ohio.

Marriage Rate in Virginia Declines.

Nineteen hundred and nineteen was the banner year for weddings in Virginia, there having been 50,904 persons to marry that year. Last year, 44,354 people married in Virginia, which was over 1,300 less than in 1923. This brings about a decline in the 1925 birth rate also.

Since North Carolina passed a law requiring the physical examination of the man before securing a marriage license, the number of persons applying to the clerk of Greensville County, Virginia, for marriage licenses has considerably increased. Whether or not the North Carolina law is responsible for this is in doubt, however, as this is the only border county in Virginia in which this condition exists.

Dr. W. H. Newcomb Goes to Illinois.

Dr. W. H. Newcomb recently tendered his resignation as head of the health unit of Nansemond County, Va., with headquarters at Suffolk, to accept the position as health

officer at Jacksonville, Ill. He has been succeeded by Dr. Charles F. Moriarty, who is a graduate of Dalhousie University, Halifax, Nova Scotia, and has had training under the International Health Board. He will have headquarters at Suffolk.

Dr. Andrew J. Nelson.

Seattle, Wash., a former Virginian, while in the East on a trip in the interest of his work with the Government, availed himself of the opportunity to visit friends and relatives in Virginia. Dr. Nelson continues his membership in the Medical Society of Virginia and called at the Society's offices during his stay in Richmond.

Dr. George H. Snead,

Of Fork Union, Va., after post-graduate work in Washington, D. C., has located in Lexington, Va., and taken over the office and work of the late Dr. B. W. Switzer. His practice will be limited to diseases of the eye, ear, nose and throat.

Dr. and Mrs. E. J. Nixon,

Petersburg, Va., were called to Washington, D. C., the latter part of September, by the illness and death of Mrs. Nixon's sister.

Dr. James M. Whitfield, Jr.,

One of the resident physicans in the Medical College of Virginia, Hospital Division, underwent an operation for appendicitis at Memorial Hospital, Richmond, the last of September.

Dr. H. D. Gilmer,

Formerly of Virginia, but now of Hagerstown, Md., has returned from Vienna, Austria, where he has been taking post-graduate work in eye, ear, nose and throat. He was a member of a group headed by Dr. George W. Mackenzie, of Philadelphia. There were about forty doctors in the party, which represented nearly every state in the Union. From the number of doctors seen in Vienna it would seem that this place still holds its prestige as a great medical center.

Besides intersting post-graduate work, an opportunity was afforded this party to do some sight seeing, especially on the way home. Some of the places visited were Venice, Milan, Luzerne, Interlaken, Geneva and Paris.

Dr. D. B. Lepper,

For sometime health officer of Isle of Wight County, Va., has been transferred to Sussex C. H., and has charge of health work in that county.

Dr. G. Foard McGinnis, of the class of '25, University of Virginia, has succeeded Dr. Lepper in Isle of Wight County, and is located at Smithfield, Va.

The American Electrotherapeutic Association

Held its annual meeting in Chicago, the middle of September, at which time Dr. Victor G. Pedersen, of New York City, was elected president. Dr. Richard Kovacs, also of New York, was re-elected secretary.

Dr. and Mrs. J. R. Adams,

Blackstone, recently spent their vaction with friends, on a motor trip which included a visit to Jamestown and Williamsburg, Va.

When the Doctor and the Red Cross Work Together.

The town which is bereft of hospitals presents a serious problem. But by the union of the local chapter of the American Red Cross and the medical society makeshift hospitals have been constructed which surmount the handicap. The combination furnishes one of the most interesting phases of Red Cross work.

It may be that a bed or two is placed in the Red Cross public health nurse's office so that in imperative need an emergency patient may be given immediate care. From this headquarters the mother may obtain in her own home the same skilled nursing care which she might receive in a maternity hospital.

For tonsillectomies, more elaborate arrangements must be made. A place must be secured, the upper floor of the Court House perhaps, or a spare room in City Hall. The community is asked to co-operate with the doctors and nurses and generous merchants come forward with cots, bedding, tables, chairs or some of the various things needed for an improvised hospital. The actual operations are performed by a specialist who comes from the city.

In the time of great catastrophes the Red Cross must be quick to make arrangements to fit the situation. The Red Cross mobile disaster relief unit is ready for service any hour of the day or night. It sends special trains, doctors, nurses, cots, bedding, surgical supplies, even portable X-ray machines, bandages, medicine and other equipment. Then emergency hospitals, dressing stations and dispensaries are set up in various sections of the stricken

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area. Just after the great tornado in the Middle West last spring the First Aid Car became a hospital with 50 patients. The Indianapolis chapter sent by airplane anti-tetanus serum urgently needed by doctors at Murphysboro and Carbondale.

No one knows better than the doctor that this work should go on. Every membership taken out during the annual Roll Call, from Armistice Day to Thanksgiving, November 11 to 26, will be used to further this cause.

Dr. Warren T. Vaughan,

Richmond, Va., announces the establishment of a Kidney Clinic for the investigation and treatment of nephritis and allied conditions, particularly arteriosclerosis and hypertension. Clinic hours are on Fridays between two and five, at which time only charity cases referred by the attending physician or social service organization will be cared for.

The Clinical Congress of the American College of Surgeons

Will hold its annual session at the Bellevue-Stratford Hotel, Philadelphia, October 26-30, under the presidency of Dr. Rudolph Matas, of New Orleans, La. Dr. Franklin H. Martin, Chicago, is director-general.

Dr. Stanton K. Livingston,

Of University, Va., who graduated from the University of Virginia, Medical School, in June, after several months at the State Hospital, Middletown, N. Y., entered upon his duties as intern at University of Pennsylvania Hospital, Philadelphia, early in October. He received appointment to the last named hospital at time of his graduation.

The American Association of Obstetricians, Gynecologists and Abdominal Surgeons

Held its thirty-eighth annual meeting at Hot Springs, Va., September 16-18. Dr. George Clark Mosher, Kansas City, Mo., was elected president; Drs. Edmund D. Clark, Indianapolis, Ind., and Palmer Findley, Omaha, Nebr., vice-presidents; and Dr. James E. Davis, Detroit, Mich., was re-elected secretary. Chicago was selected for the next place of meeting in September, 1925. This is the first time this Association has met in Virginia. Drs. M. P. Rucker and Greer Baughman, of Richmond, and Dr. Burnley Lankford, Norfolk, are the only Virginia doctors who are members.

Dr. and Mrs. W. A. Lambeth

Have returned to their home at University, Va., after a trip abroad. Most of their time was spent in Italy and Swizerland.

Dr. H. M. DeJarnette,

Fredericksburg, recently visited his sister at her home near Orange, Va.

Dr. George B. Wood

Has returned to his home at Emporia, Va., after a visit to Pennsylvania and Maryland.

Dr. A. L. Stratford, Jr.,

Announces the removal of his offices to 1601 Monument Avenue, Richmond.

The Medical College of Virginia,

Richmond, opened its 1925-1926 session the middle of September, with an enrollment of 500 in its departments of medicine, dentistry, and pharmacy, that of the medical school alone being about 350. Because of lack of space, more than two hundred applicants for matriculation had to be refused.

"Health Audit."

The Gorgas Memorial Institute has on a campaign of health education, its purpose being to aid every one to a longer life. An important phase of this work is the periodic health examination—for the doctor and his patients. This should be urged upon every one as the best means of detecting diseases in their incipiency.

Pulaski to Have New Hospital.

Stock has been subscribed for a $40,000 hospital in Pulaski, Va., and, as soon as a charter has been secured, plans and specifications will be received. The hospital will be known as the Pulaski Hospital, Incorporated. Present officers are Dr. R. H. Woolling, president; Dr. R. F. Thornhill, vice-president; and Dr. D. S. Divers, secretary-treasurer.

The Park West Medical Building

Is the name of a private general hospital which is to be erected at once on the south side of 76th Street, just off Amsterdam Avenue. New York City. The building will be eight stories, absolutely fire and noise proof, and will have sixty suites, with a capacity for seventy-eight patients. Dr. Harold M. Hays is head of the enterprise and has associated with him several well known physicians and a group of business men. It is expected the hospital will be opened about May 1, 1926.

Annual Report of the Central State Hospital

Has just been received at the office, for the nine months ending June 30, 1924, and the year ending June 30, 1925. At the last date, there were 2,271 patients' names on the books, with 2,143 in the hospital. General health of the patients was good with only minor accidents and injuries reported. There are special departments for the epileptics and tubercular patients. The percentage of patients employed since 1911 has varied from 72 to 86 per cent. In conjunction with this, suitable recreations and diversions are provided. Altogether the report shows that excellent work has been accomplished.

Tonsil Clinic in Goochland.

Late in September a tonsil clinic was held in Goochland County, Va., by the County Welfare League, at which time thirty children had their tonsils removed. Surgeons and nurses from Richmond were assisted by Dr. T. M. Taylor, State Farm, Dr. L. K. Leake, East Leake, and Dr. W. K. McCoy, Gum Spring.

The U. S. Civil Service Commission,

Washington, D. C., announces the following open competitive examinations, information about which may be obtained from the above named Commission, Washington, D. C., or the secretary of the board of U. S. Civil Service Examiners at the postoffice or customhouse in any city:

Junior medical officer, assistant medical officer, associate medical officer, medical officer, and senior medical officer; graduate nurse and graduate nurse (visiting duty); and dietitian, applications for all of the above named positions to be rated as received until December 30, 1925; also, for physiotherapy aide, physiotherapy pupil aide, and physiotherapy assistant, receipt of applications to close October 24 and November 28.

Sunlight and Health, England.

Studies by physicians and scientists in England reported at the Congress of the Royal Institute of Public Health, held at Brighton in May, indicate that sunlight, "either natural or artificial, when properly administered, may have a definitely beneficial effect on mental activity." It was found that children handicapped in school work by illness, when cured with the aid of sunlight, caught up with or out-distanced their classmates.

Child Marriage, India.

Statistics given by a writer in the *Times of India*, published in Bombay, show the extent of child marriage in India. The figures are from the 1921 census report for the Bombay Presidency. They show that in 1921 there were in Bombay, in round numbers 49,000 married girls under the age of 5 years, of whom more than 2,000 were widows; 261,000 between the ages of 5 and 10 years, 13,000 of whom were widows; 643,000 between the ages of 10 and 15, of whom 34,000 were widows. The infant death rate in Bombay in 1924 was 411 per thousand live births, compared with the United States rate (1923) of 77.

Operating Room Completed.

The Elizabeth Sharpless Keith operating room at the Fauquier County Hospital, Warrenton, Va., was just completed last month. This room represents about $5,000 for equipment.

Wanted.

A good doctor, in a field that will pay $6,000 or more annually. Open now. Address P. O. Box 24, Criglersville, Va. (Adv.)

For Sale.

Virginia $7,000.00 practice and property. Tidewater town 1,200. Rich country. Competition right. Practice easily increased to full capacity. Modern brick residence, offices and garages. Good roads, churches and schools. Model community. Price $5,000.00; require $3,000.00. No triflers. Specializing. Address No. 433, care this jurnal. (Adv.)

Obituary

Dr. Carlisle Lamar Nottingham,

A prominent doctor of the Eastern Shore of Virginia, died at Saranac Lake, N. Y., September 18, after an illness of two years. He was born at Seaview, Va., forty-one years ago. Upon completion of his academic education, he entered the Maryland Medical College, Baltimore, from which he graduated in 1905. After this he took a post-graduate course at Johns Hopkins University for another year, following which he took up the practice of his profession at Cape Charles, Va. He had been a member of the Medical Society of Virginia since 1906 and was also a member of the American Medical Association. His funeral was

conducted with Masonic honors. Dr. Nottingham is survived by his wife, three children and a large family connection.

Resolutions on Death of Dr. Nottingham.

WHEREAS, The Northampton County Medical Society has learned with sincere regret of the death of Dr. Carlisle L. Nottingham, and

WHEREAS, Dr. Nottingham in the history of his career has been an ornament to the profession, a self-sacrificing and devoted minister in the relief of human suffering; therefore,

Be it Resolved, That this Society desires to place on record its sense of loss in the death of Dr. Nottingham to the profession and to humanity, and

Resolved, That this preamble and these resolutions be placed on record, that a copy be sent to his family, and that they be published in the county newspapers and *Virginia Medical Monthly*.

Signed:

G. FRED FLOYD,
J. MORTIMER LYNCH,
Committee.

Dr. Henry Morgan Miles,

Of Norton, Va., was found dead in bed at his home in that place on September 8, though he had apparently been in good health before then. Dr. Miles was born at Jonesville, Va., in 1867, and received his early education at Jonesville Institute. After this, he took up the study of medicine at Louisville Medical College, receiving his diploma from this college in 1890. It had been his habit to take post-graduate courses practically every year. Dr. Miles had been a member of the Medical Society of Virginia since 1903, was a member of the American Medical Association and was a member and an ex-president of Wise County Medical Society. He was also a member of the Virginia State Board of Health.

Dr. Richard Urquhart Burges,

Of Norfolk, Va., a member of the staff of the Norfolk Protestant Hospital, died at his home in Norfolk, the latter part of September. He was about fifty-three years of age and a native of Southampton County, Va., though he had practiced his profession in Norfolk for about thirty years. After attending William and Mary College, he studied medicine at Medical College of Virginia, graduating in 1895, and became a member of the Medical Society of Virginia that year. He was prominent in the professional and business life of Norfolk.

Resolutions on Death of Dr. Burges.

WHEREAS, In the Providence of Almighty God, our friend and colleague, Richard Urquhart Burges, has passed from this life. Therefore, be it

Resolved, That the Norfolk County Medical Society has lost a true and worthy friend, and a conscientious co-worker.

That the membership of this society extends its heartfelt sympathy and love to his devoted, faithful and tireless companion.

That a copy of these resolutions be spread upon the minutes of this Society and be published in the daily papers.

NORFOLK COUNTY MEDICAL SOCIETY,
CHAS. W. DOUGKTIE,
KIRKLAND RUFFIN,
E. C. S. TALIAFERRO,
Committee.

Dr. Henry Rose Carter,

Assistant Surgeon General of the U. S. Public Health Service, and recognized as one of the foremost medical and sanitary experts of this country, died at his home in Washington, D. C., September 14, after a long illness. Dr. Carter was born in Caroline County, Va., seventy-three years ago. He first studied civil engineering at the University of Virginia, graduating in 1873, and later studied medicine at the University of Maryland, School of Medicine, receiving his medical diploma in 1879. After this he entered the U. S. Public Health Service, and continued constantly with the Service until his death. Dr. Carter inaugurated the present maritime quarantine system in this country and was intimately associated with Surgeon General Gorgas and Dr. Walter Reed throughout the greater part of their careers, particularly in their work in the study and control of malaria and yellow fever. Two sons and a daughter survive him. The interment was made in Ashland, Va., where he had spent much of his time.

Dr. Thomas McCormick Lippitt,

U. S. Navy, retired, of Berryville, Va., died suddenly, September 16, at the breakfast table, at the age of fifty-three. He was a graduate of the University College of Medicine, Richmond, in 1897, and was appointed an assistant surgeon in the Navy in 1898. Dr. Lippitt's bad health was due to a wound in the hip, which he received during the Boxer rebillion in China in 1900, while he and another surgeon were caring for the wounded in the British legation in Peking. He was promoted for conspicuous gallantry but was soon forced to retire on account of his injury. He was unmarried but is survived by a brother and several sisters.

Dr. Welton C. Williams,

Of Vienna, Va., died August 23, following a long illness. He was fifty-three years of age and a graduate in medicine from George Washington University, Washington, D. C., in 1899.